THE

PENN MONTHLY.

NOVEMBER, 1875.

THE MONTH.

THE loss of the Vanguard and the sinking of the yacht Mistletoe, have aroused intense excitement in the English public mind on a subject upon which it is always extremely sensitive. Englishmen have long ago become reconciled to the conclusion that while their skeleton of an army with the volunteers would be quite strong enough to protect their island from attack, the time has gone by for English military power to exert a controlling influence in European politics; but they cling naturally with all the greater pride to their naval and commercial supremacy. If seamanship, they say, be not an English virtue, where can one be found? And when, therefore, two accidents happen, by which first a yacht, and secondly one of the famous vessels in the navy, are run into in the day-time and sunk, there is no limit to the excitement which follows. A coroner's jury has pronounced the opinion, timidly to be sure, but distinctly, that the loss of the Mistletoe was due to the fact that the Queen's steam yacht was running through a crowded channel at too fast a speed, and throws the blame where it seems to belong, on the officers of the Alberta. But it is said that Her Majesty, who witnessed the affair, has vigorously espoused the cause of her young German cousin, who commands her yacht, and resented with warmth the judgment of the jury. In the case of the Vanguard the captain, Dawkins, has been dismissed from his command, but the investigation is to continue. The cause of

this accident, too, seems to have been the speed with which the fleet was sailing up the channel. A fog suddenly arose—at almost the same instant a vessel was observed ahead—the Vanguard was ported to avoid her, when the Iron Duke, which was also under full steam and following at but three cable lengths behind, came crashing into her side. The accident occurred exactly ten minutes after the fog arose. The loss of the Vanguard is likely to lead to important results. Invulnerable as she was to all but the the heaviest projectiles, her side was crushed as if it had been an egg-shell by the Iron Duke's ram. The limit of resistance in armor-plated ships, it is said, has perhaps been reached, but the piercing power of projectiles may be indefinitely extended. The most eminent authority on the subject in England calls attention to the fact that the "energy" of a 600-pound shot from a 25-ton gun, when it leaves the muzzle, is a little over 6,000 foot-tons, and would riddle a vessel like the Vanguard or the Iron Duke through its thickest armor, while that of a 35-ton gun can pierce 16 inches of armor at 200 yards. Guns of 50 tons are being made which will require 20 inches of armor strongly backed to exclude their fire, while the "energy" of a ram which weighs 1,000 tons less than the Iron Duke, is measured by about 22,300 foot-tons. A ship, therefore, which might be impervious to cannon balls, would be destroyed by a single blow of an ordinary ram. The armor, too, being placed above the water-line, requires the hull to be greatly lightened in order to support it, but the ram and the torpedo attack beneath the water. These considerations are being urged with great force, and authorities like Admiral Goldsborough and other Americans are quoted in support of them. Experience will no doubt compel naval powers, hereafter, to depend chiefly on swift rams and skillful maneuvering. A naval battle will then be decided in favor of that ship which shall succeed in striking effectively the first blow.

A MOMENTARY sensation which promised trouble, has passed over peacefully in France, but the excitement which it occasioned shows the general feeling of anxiety and perhaps distrust of the stability of the present government. The letter of Admiral de la Roncière le Noury was a rather indiscreet and frank expression of his mind. Few men ought to blame the Admiral for "repudiating

the doctrine of the revolutionists of the 4th of September"—that is to say, the theory that one government can be overturned, and another set up, by the impulses of a mob—but none can blame MacMahon for depriving of the highest naval command an officer who declares that he will obey the existing government during his pleasure. Discipline even more than political necessity demanded the Admiral's dismissal, and perhaps the Marshal-President was glad of the opportunity of showing his anti-Bonapartist tendencies, even at the sacrifice of the most able and accomplished naval officer in France. An amusing anecdote is told of the affair. When the Admiral's letter was published an eminent politician hurried to MacMahon. "Your government will be ruined," he cried, "if you do not rid it at once of all these Bonapartist sympathizers." "Ah," was the reply, "the person who went out as you came in said exactly the same thing about you."

THE Papal Nuncio recently presented a characteristic note to the government of Spain, insisting upon the fulfillment of the Concordat, which forbids the exercise of any non-Catholic creed, requires the transfer of the superintendence over education to the clergy and the co-operation of the secular power in suppressing heretical teaching and literature. Were it it not for the recent events in Montreal, where the same spirit has made itself manifest, one would hardly imagine that this claim was gravely preferred in the latter part of the 19th century, even in Spain. The Ministry replied in conciliatory language and endeavored to persuade the Nuncio, Cardinal Simeoni, that "the circumstances of the case no longer permitted him to put forward his demands." It expressed its determination to be moderate but firm, to respect religion, but also to protect the rights of the State, and to make no concession of its independence in dealing with the Bishops. The tone of the Nuncio's communication led to the inference that in the event of such an answer as this, the influence of the Vatican would be openly transferred to Don Carlos, and everything done to postpone the establishment of peace. The result very naturally followed that both Liberals and Conservatives for a time seemed to become reconciled, and it was rumored that Castelar himself had moderated his opinions, and would enter the next Cortes a supporter of the Liberal monarchy. The surprise of all men was

therefore great when the protesting Nuncio was suddenly recalled, and Monsignor Rapella, a much more liberal person, put in his place. It would seem that even Cardinal Antonelli can be convinced that with such a struggle on his hands as is now going on in Germany, it would be wise, if not to conciliate, at least not to offend, so long-suffering and obedient a vassal as Spain.

THE retirement of Mr. Secretary Delano has been so long anticipated that it has given rise to almost as little comment as regret. It seems that he tried to go last fall, and gave in his resignation in June; but as soon as he had become generally unpopular and his retirement a necessity for the party and the administration, the President, with characteristic appreciation of the situation, insisted that he should remain. He retires at last when too late to benefit either, with the usual certificate of good moral character. His successor has not yet been named, and the public mind is in the ordinary condition of doubt which now naturally precedes one of General Grant's cabinet appointments. Several gentlemen about whose initials there is no certainty, have been mentioned by rumor, but the appointee in this case, as in most of the others, will probably be a person whom no one but the President would have thought of, and of whom he alone knows anything; so we must possess our souls in patience and be content to wait.

IF we were at a loss for proof of the benefits of kindness and forbearance and the evils of cruelty and intolerance, we would find it easily this month in two Southern States. The disturbance which has broken out in Mississippi, although arising from the personal quarrels of a black sheriff of the county, and a white Senator of the United States—neither of whom, it is said, considers the other a "gentleman"—and confined to the locality in which it broke out, is quite important enough to have called forth, in the days of the late Attorney General, innumerable telegrams and even a proclamation from the President. Constant quarrels, and the determination on the part of the Northern whites, whose political power depends on it, to keep the negroes in a state of irritation—in which by the way they have too often been helped by the narrow and intolerant spirit of many of the Southern whites—have made Mississippi the scene of most disgraceful deeds. This last

is less so than those which have preceded it. Time alone can destroy prejudices, but experience ought by this time to have taught its bitter lessons in Mississippi. In Georgia, on the other hand, we have seen an equally instructive spectacle of a very different kind. The relations between the negroes and their former masters have not been unmarked by a mutual confidence, and the influence of unscrupulous white adventurers has been less there than in most Southern States. The recent conspiracy of a few ignorant and worthless negroes was promptly suppressed without bloodshed, in a manner creditable to both races of citizens, as well as to the attorneys and the just judge who tried the causes which grew out of it, and we have seen as a sequel to it a convention of blacks in which common sense and wisdom had a foremost place. A resolution approving the impartial conduct of Judge Johnson in the recent trials was unanimously adopted, and a very sensible discussion on the subject of emigration to Africa decided in the negative; the sentiment of the convention inclining by a very large majority to the more conservative course of advising the negroes to stay at home, and by industry and obedience to the laws to build up a sound and prosperous commonwealth for white men and black alike.

No one who has any acquaintance with the laboring classes in this country can fail to feel great sympathy with them in their situation at the approach of this winter. The prolonged depression of business is daily depriving thousands of work, to whom want of work means suffering and starvation. There has not been a period for a long time in this country when the prospects of the employee were worse, or the employer less able to help him. The most active industries are at a stand-still, and the business outlook growing daily more gloomy than before. Such a situation, distressing in itself, is rendered dangerous by the opportunity which it gives to the demagogues which swarm under a government like ours. Nothing is more needed for the moment than mutual forbearance and mutual confidence on the part of labor and capital. If they are said to depend entirely upon each other in prosperous times, it is even more difficult to separate their interests in "hard," and it is vitally necessary for the workingman who cannot easily pass from one occupation to another, and to whom work is

bread, to appreciate this. The politician who builds upon his ignorance, and makes capital out of his sufferings, will leave no stone unturned to stimulate dissensions and cause trouble, and on the workingman's good sense in understanding and directing this his happiness depends. The strike at Fall River has failed because the manufacturers were unable to yield to its demands. They could not have continued at old rates, and to have forced them to do so would have been the slaughter by the strikers of the goose that laid the precious egg for them. The question which the employers had to decide was, "Shall we reduce wages or stop?" and the eagerness with which work was resumed showed that it has been decided best for all parties. A prolonged strike could hardly have driven the manufacturers a step, for they stand against the wall; and it would have caused infinite suffering to the operatives themselves, however much it might have helped to adorn the periods of the orator, or promote the selfish ambition of the politician. When, therefore, so shrewd and experienced an observer of events as the Honorable Benjamin F. Butler says that the announcement that the operatives had yielded and returned to work is "the saddest thing that ever has come to his eye," it may be presumed that he refers to that one which he keeps upon his own political advancement, rather than to the other with which, no doubt, he is always looking at the public good.

As this goes to the press the sharpest State campaign since 1862 is drawing to an end. Before it passes into the hands of the PENN MONTHLY subscribers, they will have become familiar with the result. And even if it were ever possible to prophesy concerning such things, it would be useless to attempt to do so here. A word, however, may be said about the canvass. The timidity of the Republican leaders kept the main question back for the first few weeks of the campaign. But at last, when the school question had been talked into staleness, the courage of a few men like Gen. Woodford, of New York, forced the leaders up to the ground occupied by a strong majority of the party, and drew there many of the best speakers in the country, as well as the attention of all men. One by one the Independent Republicans—even Liberals like Grosvenor of St. Louis, and newspapers as outspoken as

Murat Halstead's—took up the cudgels against the Columbus platform. Carl Schurz, arriving from Europe in the middle of September, was summoned by telegraph, and for the past fortnight we have witnessed one of the ablest campaigns of argument of which a State has ever been the scene. Of the many very able speeches which have been made, Mr. Schurz's opening address to the merchants and business men of Cincinnati was undoubtedly the most remarkable. Had it contained less intrinsic worth, his peculiar position with reference to the two great parties, and his national reputation, would have secured attention to it. But the speech itself would have made a reputation for any one. Addressing himself adroitly to the Democrats, and showing them how completely they have fallen away from the truth, and turned to worshiping false idols, he proceeded to attack their present position on the money question, and to show the absurdity of the arguments which are used to mislead them. As a contribution to the political literature of what promises to be the great question of the next presidential campaign, and (as has been said) as a popular exposition of a difficult subject, Mr. Schurz's speech is remarkable. But, after all, what one may most admire in it is its independence and loftiness of tone. In these days of non-committal, fence-bestriding statesmen, it is most refreshing to read such a speech as this, and to know that there is one man at least with a national reputation who prefers honor to office, and principle to party. With such a spectacle before men's eyes as Hendricks and Thurman present on the Democratic side, and men like Morton on the other, the lofty tone of Schurz is a wholesome and much needed stimulus. Indeed, it is instructive to review the political history of the past few years, and see how many changes have taken place—and how soon the whirligig of Time has brought in his revenges. Three years ago this autumn Horace Greeley was running for the Presidency. Sumner had been reprimanded by Massachusetts; Carl Schurz read out of the party; Charles Francis Adams pronounced a renegade: Logan, Conkling and Morgan ruled with a rod of iron an obsequious Senate. The Republicans were about to place a governor at Albany, and had carried Pennsylvania by nearly forty thousand majority. The President, absolute master of all the branches of the government, as he sat down a second time in the chief ruler's seat, overlooked a

country in which his party had carried three-fourths of all the States by a majority larger than had ever been known before. At no time in the history of the government had a party seemed so strong: never were leaders more intolerant. To-day how different the spectacle! The elections have gone against it in a dozen States. Sumner is dead, amid the repentant eulogies of Massachusetts, in whose gubernatorial chair sits a Democrat; and the failure of the Republican Convention to nominate Charles Francis Adams is commented upon by Republican newspapers as a blunder which will cost the party the election. The fate of Pennsylvania hangs on the hazard of another State; and not even the enforced absence of Conkling from the convention, and the snubbing of the Custom House, coupled with the nomination of a Liberal Republican on its ticket, give the leaders hope of regaining their lost hold upon New York. A party, justly distrusted, and with a record which no other organization but its own could have survived, has been suffered by the people to return to power as the lesser of two evils, and in the most momentous political struggle since the war, with State after State slipping from its grasp, and the Presidency almost beyond its reach, the Republican party calls in its extremity, not on Morton, nor on Logan, nor on Conkling—but on Schurz!

In Ohio, indeed, it is entitled to all that he or any other man can do for it. With an excellent nominee for governor, upon an honest, outspoken platform, it is defending the national honor. All other questions sink into insignificance before that. The school question is not yet a national one, and it may well be doubted if the Catholic church will be rash enough to renew her claim to the control of the "Great West," of which Ohio herself was the battle ground more than a century ago. When that danger comes it will be time to meet it. But with this other we are face to face. It is the entering of the wedge. The defeat of Hayes, followed by the success of the Erie platform in Pennsylvania, will drive it in far enough to wound, if not to split:—the defeat of Allen will break the point off short. In the latter case we shall have escaped a peril infinite in its consequences for evil; in the former, there will be hard work for every man to do.

THE campaign in Pennsylvania is absolutely at a standstill.

Strange as it may seem, it is considered by both sides to depend so much on the result in Ohio, that as if by mutual consent there is a sort of armistice until after the evening of the 12th. Had the Lancaster Convention placed itself fairly upon the hard-money side of the fence, this would not have been the case; but unfortunately it did not do so. And up to the present moment the most prominent speakers on the Republican side have handled the financial question in so gingerly a manner as to lead many independent minds to the conclusion that had the Democrats adhered at Erie to their party principles and traditions, and declared in favor of "hard money," the exponents of the Lancaster platform would have argued to the people that theirs called for "paper;" and it even gives rise to the fear that, perhaps, if Ohio goes Democratic, they will do so still. In fact, with the exception of two gentlemen lately known as Liberals, and who have rejoined their old party and made hard-money speeches in Philadelphia, no prominent speaker has boldly taken that ground, and little confidence can be placed in the convictions of a party which waits to hear how the people have voted in a neighboring State before it commits itself on a question like this of coin or paper. There is evident reason to apprehend that the cry for more greenbacks is very popular in some parts of Pennsylvania. In Allegheny county, so long a Republican stronghold, the people are said to be unanimous in favor of inflation, and in other parts of the State that policy (if policy it can be called) finds many individuals in the condition of the gambler, who, having lost all thus far, insists on having more "chips" and continuing the game. If all these things be true, a hard-money declaration and hard-money speeches would cause the party to lose votes in Pennsylvania; but the time was when success was not the only thing prized by the Republican party. In the short-sighted management of unworthy leaders, it has thrown away many advantages and sacrificed more than one noble opportunity. It sees to-day the chance of becoming the party of administrative reform, snatched from it by an enemy no sincerer than itself; but now, through the mistakes of that same antagonist in its undue eagerness for power, a great opportunity has arisen, as if Providence, mindful of the glorious work the party of the Union once achieved for liberty and humanity, had given it one more opportunity for redemption. An honest, manly

course may perhaps save it as a party, and enable it again to benefit the country; the result may be defeat, but it will not be dishonor.

But if all is quiet in the State, there is noise in Philadelphia. The Committee of 62 of the Union League has followed up its action to which we alluded some months ago, and refused to endorse the nominees for office on the county ticket. No other course, under all the circumstances, was left open for men of self-respect; and though the Committee delayed, it did not hesitate. The result has been, as was foreseen, intense excitement and indignation among the candidates' friends. The Union League has got so much in the habit of formally endorsing everything done by the party managers in Philadelphia, without regard to any other considerations, that such independence on the part of its Committee has taken the breath away from many an aspiring bosom, and caused more than one official heart to swell with anger. Newspapers, ordinarily placid, have sparkled with rage and advertisements, and more than one has been literally "awakened" with astonishment. The League is to be convened about it, because this time it is the League's ox that has been gored; the instances on record in which the institution has countenanced such things applying invariably to others' oxen. Long before this reaches the reader's eye, the question whether or not the Union League of Philadelphia contains a majority of those who sympathize with the corrupt politicians who have so long disgraced our municipal government and abused the people's patience, will have been decided. The politicians, who have their all at stake, will strain every nerve to secure a majority against the Committee. They may succeed, and the League remain the memory of a moral force in politics; but effect is certain to follow cause—and the end of abuses is at hand. That famous band of brothers (who were wont once to assemble only for "social" purposes), which has furnished so many servants to the State, is rapidly dissolving away—men no longer "mysterious" even deny that they are "pilgrims;"—the very citadel of power is shaken; "the Thanes fly from it," and there is no need of witches to foretell the host that some day soon will march from "Birnam-wood to Dunsinane."

EDUCATIONAL REFORMS AND REFORMERS.—IV.

SELF-EDUCATION THROUGH THE NATURAL SCIENCES, BY JOSIAH HOLBROOK.

COMMUNITIES as well as "nations are slow and reluctant learners." Nothing is found more difficult than the introduction of educational ideas, regarded as new because unknown to the majority. To convince even a small minority that there are more attractive and effective modes of teaching children than usually practised in schools, requires a leader who not only sees the need of a change, but becomes wholly engrossed in endeavoring to bring others to a like conviction of its necessity.

In some instances, during the life-time of the leader, there is encouragement given him, which promises success for the ideas and plans he has presented. Should others survive, capable of carrying on the work, it may be prolonged; but if there be a lack of the requisite faith, energy and perseverence that brought it into notice, there is but little hope of its continuance.

My attention being drawn more than thirty years ago to the "Educational Tools" advertised by Josiah Holbrook, a set was procured for my children. With these, several copies of the Self-Instructor were received, showing the advantages of an elementary instruction in the Natural Sciences as the most attractive and effective mode of inducing children to take interest in their own education. The aid afforded by their use led to their preservation, and is the inducement to give a fragmentary sketch of the labors of Mr. Holbrook.

The title page of a pamphlet used as a Circular gives the plan pursued: "*The Self-Instructor and Scientific Apparatus, for Families and Schools: an Introduction and Aid to Books.*" The Apparatus is thus described: A set embraces—

For Geography, a globe, map of the world, and of the United States.

For Geology and Mineralogy, there is a Cabinet of fifty labelled specimens, showing the elements, structure and strata of mountains and the earth, with several of the most useful metals.

For Geometry, there are diagrams and solids, with an Album or book of combinations, showing the figures, names, properties and uses of this simple practical science, fitted more than anything else to employ young hands, and interest young minds.

For Arithmetic, there is a numeral frame, with movable balls or counters to illustrate practically addition, subtraction, multiplication, division, numeration and the squares and roots of numbers.

Illustrations by all the above articles are presented directly to the eye and memory, and of course ought to precede the abstractions of numbers and the arbitary signs of knowledge in books, words and letters.

For the whole, is an accompanying Manual of explanations and questions, to render their various uses plain, simple and interesting, not only to parents and teachers, but to pupils of all ages.

Mr. Holbrook also enlarges on the importance of Drawing as an elementary exercise. The Motto he gives for Parents and Teachers is "Nature before books, drawing before writing." Drawing speaks a universal language, understood by all nations and tongues. It is applied to numerous subjects, both of nature and art, representing plants, shells, insects, fishes, birds, quadrupeds, houses, bridges, machinery, landscapes, and many other things. For many reasons, it ought to precede writing in a course of early instruction for children. Horace Mann says in a report of his visits to schools in Europe, "Such excellent hand writing as I saw in the Prussian schools, I never saw before. In Great Britain, France, or in our own country, I have never seen schools worthy to be compared with theirs in this respect. This excellence must be attributed to the universal practice of learning to draw contemporaneously with learning to write. I believe a child will learn both to draw and to write sooner and with more ease than to learn writing alone." A highly skilful teacher, says Mr. Holbrook, requires a map to be drawn of each country studied, stating it was not only a mode, but the mode of studying Geography. By permitting children, both at school and at home, to make drawings and write descriptions of numerous objects in nature and art, in which their feelings are interested, their hands, eyes and intellects are employed and their minds constantly stored with new ideas.

Mr. Holbrook refers to his own experience as having been gained "after a continued course of experiment for more than twenty-five years on subjects and modes of teaching." The theory of Self-education became the basis of his system—the natural sciences the right avenue to the domain of knowledge, and the best agency in the moral as well as the mental training of children. His efforts were directed to two classes—to children as children, without any regard to the social position of their parents; and to working farmers, mechanics, and all manual laborers, whose occupations prevented their obtaining the benefit of a thorough school training, but who by a course of self-education in social lyceums and scientific exchanges, could be elevated to a higher grade of mind and character than they might ever have reached in the routine of the schools.

I. Every child is naturally his own teacher. He teaches himself things, and everything coming under his own observation—animals, vegetables, minerals, tools, and the operations of farmers, mechanics and housekeepers. He teaches himself by seeing, hearing, tasting, smelling, feeling, talking, handling, using, and comparing things and their operations with each other, also noticing cause and effect.

Every child under six years of age has an intellectual or scientific taste, or a strong love for the productions and the operations he witnesses in the great cabinet and the great laboratory of Nature. He is also disposed to collect a cabinet for his own amusement and instruction. When children are encouraged and aided by parents and teachers, their taste for science, for intellectual and moral pleasures, is greatly strengthened; if neglected or discouraged, this taste is lessened and more often entirely lost.

Every child of common talent learns a language before he is three or four years old. When children are taught, or attempted to be taught, in school they are usually a long time in learning the Alphabet, and thousands, and hundreds of thousands, now[1] in our country, who have professedly studied from two to five years the "art of speaking and writing correctly," neither speak nor write any more correctly than those around them, who never got a lesson or saw a grammar. Is this defect in the pupils or

[1] 1841.

the mode of teaching? An answer to this question will be attempted in the future numbers of "The Self-instructor." Modes will be pointed out by which adults, as well as children, can teach themselves. Not only teach themselves, but by a course of self-instruction secure the highest enjoyment, and certain respectability and usefulness. Hints, suggestions, and plans, will be thrown out for the benefit of parents, and especially mothers, for the best of all intellectual workshops—families—also for teachers as aids in enlisting them in the improvement of their pupils. "The Self-instructor" will also contain short, practical lessons in the sciences, for the entertainment and instruction of children both at home and at school.

KNOWLEDGE OF THE EARTH.

Geography, geology, and geometry, furnish lessons for substantial instruction to children. From a field, garden, yard, are obtained the elements of geography. A rock, the door-stone, or gravel in the streets, afford a useful and necessary inlet to the wonders of geology. A table, pitcher, plate, apple, and everything else which has form, embrace principles of geometry, and convey to a child's mind some of its first, most delightful and useful impressions.

By a globe and maps for geography, specimens of minerals for geology, solids and diagrams for geometry, with a slate and pencil for drawing and writing, encouraged by the parent or teacher, no child fails to be employed, interested and instructed, or to learn to read, write and spell, sooner and better than any one does or can from mere formal lessons from books. Can any one doubt that natural instruments of instruction, furnished in great variety and richness by the hand of our Creator for the intellectual and moral creatures of His power, in their early thirstings and reaching after knowledge, are better than the instruments of human contrivance, furnishing at best but the arbitrary signs of knowledge?

When once started in the track of knowledge—real knowledge, not unmeaning words—children have no disposition to stop in their course. From the first pebble that meets their eye they can proceed to the elements and structure of the whole globe. From these, to the upheavings of mountains and the outbreakings and outpouring of volcanoes, they are led thus to examine the great

monsters and little monsters once teeming with life and action upon our earth, but now forming a great part of the rocky mountain masses composing the earth. From the elements, the structure, divisions, motions, changes and productions of the earth, their attention is naturally carried to the heavens—from geography and geology to astronomy.

In a letter received from Mr. Holbrook, January, 1842, he writes: "It is an encouraging circumstance that numerous minds in different sections of the country are taking the same practical common-sense view of early education, as distinguished from the systems of abstractions and theories so common in schools. The first and best knowledge for the elementary work, is an acquaintance with the simple, beautiful and practical principles and objects, so delightful to every child, and brought into use in every pursuit of human beings.

"By making nature the ground-work of an education, reading and writing come as a thing of course. The wants of a child impel him to learn them as instruments, not as sources or objects of knowledge. I have known several cases in which children learned to read by themselves. If the bla, ble, blo, system could be abandoned for a system of practical knowledge, in learning tools by their use, such cases would not be exceptional."

THE CAPABILITIES OF CHILDREN.

With all the partiality of parents for their children they are little aware of their capabilities. What are these capabilities? How are they exerted? What do they perform? What is the proper mode of directing them, and to what extent can they be improved? are questions of deep interest to parents, and scarcely less so to the philosopher, the philanthropist, the statesman and the Christian. To answer these questions, the first thing is to look at facts, to learn what they desire to do, and what they are capable of doing, by what they actually perform while acting freely.

The first thing prominent is their ceaseless activity. Even before they can walk their physical exertions are to the extent of their strength. Children not only acquire ideas rapidly, but words to express them. Every child soon learns just as many words as he has occasion to use, and no more, as he learns them by using them.

Still more remarkable is their moral power. If one principle is innate, as shown in children, it is an approval of what they deem right, and a disapproval of what they believe to be wrong. Any one witnessing the moral character shown in their acts, must see the truth and force of the repeated remarks of the Saviour, recognizing them as worthy of imitation. How lamentable, then, that parents and teachers, with others around them, by their contracted and selfish treatment, should obliterate the natural feature of their character.

No fact can be more fully proved, than that a class of children of a larger or smaller growth can acquire larger mental treasures by a three hours ramble in a field, through a forest, over a mountain, on the banks of a river, by the way-side, or in a garden, than they often acquire by three weeks over books.

Geological or botanical excursions, the breaking and gathering of minerals, or the collecting and arranging of plants, are modes of giving employment to the body in connection with the mind at once healthful and delightful. A successful teacher in Philadelphia remarked, on his returning from a geological excursion with his pupils, they learned more that afternoon than they ever learned at school. In some instances schools were specially adapted for teaching the natural sciences, having all the requisite facilities provided for illustrating the different branches.

It is evident from other sources than the statements of Mr. Holbrook's persevering efforts, that there must have been an awakened interest in the importance of education not only in those who were teachers by profession, but among statesmen who regarded its ultimate bearings upon the character and destiny of the government and the people.

De Witt Clinton, when Governor of New York, in his message to the Legislature said: "Every effort ought to be made to fortify our free institutions; and the great bulwark of security is to be found in education—the culture of the heart and head, the diffusion of knowledge, piety and morality. Upon a proper system of education and correct modes of teaching, we must rely for the purity, the preservation and the perpetuation of republican government." Among the subjects he referred to, as valuable lessons, in childhood, as preparatory for future manhood, "were the elements of the physical sciences, the fundamental principles

of agricultural and political economy, with much in history and biography."

In the *National Intelligencer*, in 1838, in an article on Popular Education, we find the following:

"The enlightened friends of republican government have now but one opinion as to the true means of preserving and perpetuating the system, and that is by an immediate adoption of active measures for promoting a more general and liberal system of education of the rising generation. We are pleased to see our vigilant and enlightened fellow citizens at the north are turning their direct attention to this important matter."

At a convention held at Concord, Massachusetts, the following subjects were committed to several committees: 1. In what order should the various branches of knowledge be taken up in the natural progress of the human mind. 2. To what extent and by what means should moral education be promoted in common schools. 3. On the best means of exciting the community on the subject of education. 4. On the expediency of making the course of instruction in common schools so ample and various as to meet the wants of all classes.

II. In 1826, a few farmers and mechanics in a small village in Massachusetts, organized a society entitled "The Millbury Branch of the American Lyceum;" its object—the mutual improvement of its members and the diffusion of knowledge. From that humble, but dignified and republican origin, has arisen the general institutions of lyceums, now in operation[2] in many sections of both continents.

It is evident, if farmers and mechanics through the country, generally, should enlist in the work of self-education, they might reform and perpetuate our republican institutions and hand down Christian Republicanism to posterity. Without that step, it is equally evident that though the American Republic may retain its name, Republicanism in America will only be known by its ruins.

The union of manual labor and study was a favorite plan of Mr. Holbrook—which he regarded as the right basis of social as well educational reform. He says, "that to deprive the laborer of a sound mind and the student of a sound body, is a vain attempt to cast asunder what God intended should be joined together."

[2] Nov. 1841, Self-Instructor.

Similar suggestions, as *ideas* simply, and not of *plans*, have recently appeared in 1875, on the importance of "Industrial Training and Art Education in the Public Schools," owing to the fact asserted "that the larger number of the children belong to the class which must earn their living by manual labor." The "advantages and benefits to be received from drawing and the arts of design to mechanics and artisans," are also brought as prominently forward as by Mr. Holbrook many years ago. Another writer says: "With all our boasted improvements in education, there is little headway made against the increase of popular ignorance. In order to meet the evil, a kind of culture adapted to the masses of the people is a prime necessity. The schoolmaster holds a position of vital interest to the destiny of the republic, and should neglect no means for the wise and efficient discharge of his significant functions."

Mr. Holbrook's efforts were, also, in his day, directed to individual, social and national interests, through the primary importance of a true education upon the right basis.

[From Self-Instructor, Feb. 1842.]

FARMS AND WORKSHOPS.

"The time is coming when farms and workshops will be no less valued as institutions of learning than for producing every variety of food, clothing and implements; not merely for acquiring a knowledge of agriculture and the mechanic arts, but of the whole circle of useful knowledge, including the sciences, history, biography and the manners and customs of nations, &c. Are not all farmers and mechanics experimenters in science? Does not every mechanic in every operation he performs apply and, of course, illustrate some principle of science? Which of the natural sciences does not the farmer use in his business? Is not Botany or a knowledge of plants essential to the success of every farm? Is not Geology which treats of the elements of soils and mode of improving them, at the very foundation of Agriculture? Do not the grasshopper, cutworm, wheat fly and many other insects give to farmers expensive lessons in Entomology? By more attention to the subject, might they not acquire their knowledge under less expensive tuition? If any implement used by the farmer violates any principle of Philosophy, does it not impose upon man and beast unnecessary labor? In dividing farms, in laying out fences, in erecting buildings and other operations, do not farmers make a constant application of Geometry? Does any other pursuit afford as good advantages for the cultivation of

honesty, sound morals or of piety as farming? Do not their winter evenings afford favorable opportunities for reading, and by conversational circles in Social Lyceums for aiding each other in their reading, scientific experiments and almost any mode of improvements that may be desired?"

In another place Mr. Holbrook says of farmers who have thus improved themselves by self-culture: "They will never fail to make our safest and most enlightened legislators, and the great dependence of every nation, physically, intellectually, morally and religiously."

Mechanics next to farmers are the most numerous and the most important class of the community. Whatever promotes their interests promotes the interests of the public. They, like farmers, have great facilities and great inducements to become men of science and sound knowledge. Every mechanic brings into use some principle of science, which principle it is of course his interest and his convenience to understand. Every apprentice boy who spends a few minutes daily in useful reading and other modes of improvement will in all probability be a man of future influence and respectability. The apprentice who seeks the interest of his employer, promotes his own interest, as character is the best capital a young man can have for the commencement of business. Mechanics, like farmers, make safe and enlightened statesmen. They are fitted for legislators and other offices, because educated in the schools of experience. Who can be better qualified to make laws for aiding the operations of business than those engaged in these operations.

SOCIAL LYCEUMS.

The social lyceums referred to by Mr. Holbrook as one of the favorable opportunities for farmers and mechanics in acquiring knowledge by self-instruction, appear to have become popular among all classes in the large cities. We have no definite information whether they were first introduced in Europe or America, but Mr. Holbrook speaks of the first organized in 1826 as a branch of the American Lyceum and as the precursor of others.

"The Scientific Apparatus," and "The Self-Instructor" added to the zealous efforts of Mr. Holbrook, in behalf of "Social Lyceums" and "Scientific Exchanges" were no doubt the means of bringing them into general notice and appreciation. From

not having seen a description of their organization, the order of their exercises and the manner in which subjects were introduced, information was requested and given. "The most beautiful form of the Lyceum," writes Mr. Holbrook, "is the reading and conversational circle, consisting of half a dozen or ten or fifteen ladies and gentlemen, who meet weekly at their own houses." These social lyceums are the purest republics in existence. Every individual, old and young, males and females, learned and unlearned, are on the same footing as nearly as the circumstances of the case will admit.

Ladies not only participate in the exercises of the meeting, but they fill a portion of the offices, and fill them with efficiency and dignity. The president is commonly a gentleman and the secretary a lady. They vary much in their exercises. The following is nearly the order of exercises in this city (New York).

1st. Reading the minutes of the last meeting. 2d. Exhibiting specimens of nature and art. 3d. Hearing correspondence with other societies or individuals. 4th. Reading original pieces or extracts from books upon the subject selected for the evening. 5th. Answering questions assigned the previous meeting to the members severally. These questions are generally matters of history or principles of science instead of questions of debate. It is one principle in these social circles for each member to use his endeavors to get others formed, also to have every member correspond with some friend or acquaintance in some other place.

You will, of course, perceive that such small circles in great numbers will form tributaries to more general meetings. Suppose, as a common arrangement, that these social lyceums meet weekly, and larger ones, composed of these, meet monthly, and still more general societies meet quarterly. Arrangements, of course, are varied to suit different circumstances, pursuits, tastes, etc. Our motto is "Exchange or Coöperation." Within a few years past, small circles formed for social, intellectual and moral improvement, have been organized in great numbers in Boston, Philadelphia, New York and many country villages and neighborhoods. Between these circles have been a correspondence and a kind reciprocation of views and efforts, full of gratification to the individuals concerned and of usefulness to our country and the world.

CABINETS OF NATURE AND ART.

At one time a museum or cabinet of curiosities could be examined only in a few of our principal cities. Now, similar collections are common in schools and families in various sections of the country. Some twelve years since,[3] a juvenile lyceum in Boston prepared a number of small cabinets of geology and sent them to the members of the Legislature, then in session, to be circulated among the schools in their respective districts.

The next legislature ordered a geological survey of the State, for which Professor Hitchcock was appointed geologist. About eight years since, by a similar agency in Philadelphia, small cabinets were sent extensively through the State of Pennsylvania and a large one placed in the capitol in Harrisburg. The next legislature ordered a geological survey, making provision for a cabinet in every county in the state. A geological survey of nearly every state has now been completed.

About six months since, a gentleman made an incidental visit to a school of 40 boys, to whom, at the request of the teacher, he gave a short lecture on geology, in which he recommended the formation of geological cabinets. With all the ardor of young spirits in a good cause, the boys procured some old cigar boxes, which they cut, partitioned, papered and filled with minerals. One of the boys, wishing to obtain admittance to the fair of the American Institute, applied his knowledge of geology for that purpose. He prepared a neat mahogany box, which he filled with minerals, collected, arranged and labelled by himself, and then sent it to the Institute. For this he received a ticket of admission, and was awarded a diploma for the second best collection of the kind received for the exhibition. The young ladies in a seminary in Massachusetts sent to the members of a similar institution in Georgia a box of geological specimens. In a few weeks a collection of plants was received from Georgia in return, which exchanges continued between the two schools for several years, greatly to the advantage of all the parties concerned. In less than two years after the box was sent, the young ladies in Georgia had collected a large cabinet of minerals, a botanical cabinet and a library, each in a beautiful case, and were in

[3] 1829.

correspondence with schools and lyceums in seven different states.

III. Grounded on the great mutual advantage of a system of scientific commerce, an Exchange Lyceum is organized, the leading object of which is to institute and extend Scientific Exchanges through this and other countries. A depository is provided for this Lyceum, designed as a place of scientific resort, and for depositing, examining and exchanging specimens of any department of nature and art. Not merely minerals, plants, shells, drawings, prints and other specimens in the various departments of science and art, but books may be exchanged, greatly to the advantage of the two parties which may be concerned. In hundreds and thousands of cases, persons have books, perhaps duplicates upon which they may place but little value, but which would be of the highest value to some other individuals, whose taste or pursuits would bring them into requisition.

A few days since, a gentleman from the country called at the Exchange Lyceum, New York, with a box of minerals for which he wished and received others in return. The specimens he brought were rare here, and those given in return, though abundant here, are rare in the part of the country from whence he came. Though the specimens he left with the Lyceum were worth a hundred times as much as those he received, yet the stranger remarked that he had the best of the bargain and would send another box, and in a few days fulfilled his promise. Cases of a similar character are of frequent occurrence.

Another more striking instance of the benefit of exchanges is copied from a letter received in April, 1873. "An example, perhaps, will give you the best illustration of the operation and results of the scientific commerce referred to: Not long since a young physician from New Hampshire called at the Lyceum with a drawing of the laurel (*Kalmia latifolia,*) requesting for it, minerals in exchange. A day or two after, he called with a large size drawing of the human skeleton, requesting also minerals in exchange, and asking if I would like a drawing giving a back view of the human frame. He took minerals for the whole, which he said he should use for promoting a taste and knowledge of science in New Hampshire. A few days after, a young man just commencing a course of medical studies brought in an English Herbarium—a col-

lection of English plants, wishing to dispose of them in some way to aid him in his studies. He asked if he could have one of the drawings of the skeleton above mentioned: to this he received an affirmative answer.

"The result was, the young physician was furnished with a cabinet of minerals for promoting science in another State, a young medical student was aided in the course of his studies, and the Lyceum was furnished with a drawing of a human skeleton and a drawing of one of the most beautiful shrubs, in connection with the moral and intellectual influences arising from visits to a Scientific Depository, with the kindred spirits from different parts of the world."

Professor Silliman of Yale College is engaged by the Exchange Lyceum to give in New York a course of lectures on Geology the first week in May (1842). In connection with the lectures, specimens will be arranged at the Exchange Lyceum so as to illustrate the subjects presented. Special arrangements will be made for excursions to collect specimens or increase the collections of the members for exchange with their friends.

Rev. John O. Choules is engaged by the Lyceum to give a course on English History, in connection with a course of reading and written abstracts, by those who attend his lectures.

On Chemistry, Botany, the English Language, Drawing, Geometry and other branches of mathematics, courses of weekly or semi-weekly instruction will be provided.

A course of lectures is in preparation on the history, character, duties, rights and influence of woman—to be given by a lady before a morning class of ladies. They will give a view of woman as she has been, as she is, as she may be, as she ought to be—as a daughter, sister, wife, a mother, a Christian and a member of the great human family.

The extension of scientific exchanges with other lands was a cherished plan with Mr. Holbrook. The "Self-Instructor" was intended to be the preparatory medium for their introduction in foreign countries as its successive numbers had in his own. An extract from a letter thus mentions their publication: "Only four numbers of the *Self-Instructor* have yet been published, owing to a multiplicity of engagements which prevented my giving it the necessary circulation. It will, however, be continued, and

as the numbers published have been translated into Spanish in the city of Mexico, for circulation in schools and families in Mexico and South America, it will virtually be a medium of correspondence and an instrument of scientific exchanges between those countries and this."

Mexico and South America are now opened as a field of intellectual and moral culture. Various individuals of the greatest influence and in situations the most favorable for promoting a system of coöperation between those countries and this, have visited the Exchange Lyceum within the year past, and have expressed the greatest confidence and spoken with enthusiasm of the enterprise in progress contemplated by the Lyceum system, especially the system of scientific exchanges. Three letters from foreign officials are published in the *Self-Instructor*, December, 1844, acknowledging the value of the system, the benefit of the scientific apparatus in elementary education, and the scientific exchanges, as tending to promote an enlightened and pacific intercourse among nations. They also promise their aid in its extension through their countries as far as their position enabled them. One of the letters was written by General Almonte, Minister Plenipotentiary of Mexico, another by the Brazilian Consul, and the third by the Venezuelan Consul.

Dr. Thompson, for many years agent of the British and Foreign Bible Society in South America and Mexico, at a meeting of the friends of education held at the American Institute, gave a narrative of his efforts in Buenos Ayres, Chili, Peru and Mexico, and the favor with which his efforts were received. He spoke with great interest of the apparatus and plans of Mr. Holbrook for promoting the cause of public education in all countries, and especially in the Southern Republics.

Mr. Holbrook was then introduced to show the advantages of the "Educational Tools," comprising the apparatus for the advancement of primary education. Resolutions were introduced approving it as being adapted to the object proposed, and recommending its adoption by the trustees of the public schools, and especially to the guardians of orphan asylums and houses of refuge—as uniting amusement with instruction.

Mr. Holbrook spoke of "Scientific Exchanges" as being established several years previous, and that Alexander Vattemare, of

France, had secured for a kindred enterprise the patronage of several governments. Chevalier Friederichsthal, Secretary of Legation for Austria, is also devoting his life to the same system, and will gladly make large returns for any specimens of American productions sent to him at Vienna. It was one of the special objects of the New York Depository to institute regular exchanges with similar establishments to those of M. Vattemare and Chevalier Friederichsthal, and through these, with institutions in Europe, Asia, Africa, and the islands of the sea.

In presenting the system and plans of Mr. Holbrook, by gathering portions here and there, from the few records in my possession, it is evident there was a higher object he endeavored to promote than mere scholastic education or scientific knowledge for children or adults.

Among the many testimonials from school trustees and superintendents, there is one from an agent of "The Public School Society," that enters into full appreciation of the whole scope of Mr. Holbrook's views—as to intellectual training and the higher object to be attained. After referring to the elements of the sciences, each separately illustrated by the apparatus, the writer says: "Thus, without anything extraneous or perplexing, *distinct ideas* are conveyed to the untaught mind. To those acquainted with the right principles of teaching, it is unnecessary to speak of the value of knowledge thus obtained—it becomes a *perpetual possession.*" Mr. Holbrook's plan of "Scientific Exchanges" is no less of a practical bearing, and in its tendency yet more valuable, directly cultivating habits of industry and developing the social and benevolent affections; at the same time cultivating the faculties and improving the use of the senses, giving elevated ideas to the morally degraded, and offering a successful means of reform from idleness and vice. As a great means of mental and moral development, they are worthy attention by all who desire to promote useful knowledge and to seek the real benefit of their fellow men.

We know nothing of the scientific acquisitions of Mr. Holbrook, or of his ability to lead his pupils into the higher branches of these studies. It was not his intention or his aim, that those aided by his plan should possess as profound views as those who could afford to spend years in these pursuits. In giving "the keys of

knowledge" they had the opportunity to open the doors at the fitting time, when the need should be most felt.

It is said by Arnauld, the friend of Pascal, that "Wise men ought to make their sciences the exercise and not the occupation of their mental powers. Men are not born to employ all their time in measuring lines, in considering the various movements of matter; their minds are too great and their lives too short, their time too precious, to be so engrossed; but they are born to be just, equitable, and prudent, in all their thoughts, their actions, their business: to these things they ought especially to train and discipline themselves."

ELECTRIC FISHES.

THE most interesting topics of science are those points at which several departments meet. Here men become truly scientific, are forced to take broader views, and cease to be specialists only. Each investigator steps out of his own province to shake hands with his neighbor. Notes are compared, different lines of research placed side by side, and new thoughts suggested in great variety. Take for example the spectroscope and its applications, in which chemistry, physics, and astronomy share. One science is made from three, and each is lifted into higher relations with nature. The electric fishes afford us another connecting link between diverse branches. These strange creatures interest alike the naturalist, the physiologist, and the electrician. To each department they furnish abundant material, both for experiment and speculation. No other living beings are more suggestive of thought. It is my purpose in these pages to summarize briefly what is known concerning them, especially upon the electrical side.

Four, and perhaps six genera of fishes are known to contain species having electrical power. The four which are well vouched for are Torpedo, Gymnotus, Malapterurus, and Tetrodon. The doubtful genera are Trichinus and Rhinobatis. One species of the former, found in the Indian Ocean, is said to be electrical; and one of the latter, from Brazilian waters, has been reported

capable of giving shocks. These two need verification. Many other fishes possess rudimentary electrical organs, which are, however, not sufficiently developed to warrant special notice here.

The electrical Tetrodon, also, has been but meagerly described. It was discovered almost a century ago by one Lieutenant Paterson of the 98th English Regiment, who made his discovery public through a letter to Sir Joseph Banks. The Lieutenant was on the island of Johanna, one of the Comoro group, in the Indian Ocean. Here, in cavities among the coral rocks, he found some strange fishes—two of which he captured by means of a linen bag. Taking one of them in his hand he experienced a severe shock, which forced him to let go his hold. He recaptured the creature, however, and carried it two miles to camp, where, although in an enfeebled condition, it still had power to give slight shocks to others as well as to himself. The fish, which soon died, was about seven inches long by two and a half broad; was spotted with various colors, and had a long, projecting mouth. (See Paterson's letter, with a poor illustration, in Vol. 76 of the Philosophical Transactions.)

Of the other electric fishes the Torpedo seems to be best known. From time immemorial it has attracted the attention both of students and of fishermen. Aristotle and Pliny described it, while Galen and Dioscorides recommended its shocks for curing headache and gout. Medical electricity over two thousand years ago! Of the Torpedo there are several species. Two, if not more, are found in the Mediterranean, along the Atlantic coast of France, and rarely in English waters. Others have been captured near the Cape of Good Hope, another is found along our own Atlantic seaboard, and Humboldt describes one which he saw at Cumana, taken in the Caribbean Sea. In shape the Torpedo resembles the Skate very closely, belonging in fact to the same class of fishes, being broad and flat, with an elongated tail, and a generally repulsive appearance. In size these creatures vary considerably. The Torpedoes from the Cape of Good Hope are rarely over eight inches long. Those of the Mediterranean and the French coast are larger, and a fish of sixteen inches long by seven broad is reckoned of average size. But in English waters, especially at Torbay, they sometimes grow to prodigious dimensions. Noad mentions

one which was four and a half feet long, and weighed seventy-three pounds. They are captured only with nets, never being known to bite at a hook.

Of course the peculiarities of the Torpedo have led to its receiving a variety of characteristic names. In England it is known as cramp-fish, numb-fish, and electric ray; in France as *la tremble;* and in Malta as *haddayla,* a word which refers to its benumbing power. Sometimes its flesh is eaten by the poorer classes, although the electrical organs are scrupulously avoided, being slimy and disagreeable. But it is with these organs that we have chiefly to do. The uninitiated person who for the first time boldly grasps a Torpedo is likely to be very much astonished. A lively fish sixteen inches long will give him a more violent electric shock than any common person can bear. If, however, he should be plucky, and retain his hold upon the creature, the latter will soon exhaust itself, and be for some time unable to generate any more electricity. But for a while the shocks will succeed each other very intensely, and with great rapidity. Walsh obtained fifty shocks from a vigorous Torpedo in one minute and a half, and by means of wires was able to transmit the impulses through eight persons at once. After the fish has become languid, it needs a long rest to recuperate its powers. When it is in full vigor the shocks are emitted from all parts of its body, but soon limit themselves to the immediate vicinity of the head. They are voluntary in character, being given off at the option of the Torpedo, which cannot, however, control their direction. Ordinarily a shock is not felt upon merely touching the fish; the latter needs first to be irritated, best by pricking its fins. In shallow water the Torpedo has the unpleasant habit of superficially burying itself in the mud, in which condition it emits its most powerful strokes. Then the unhappy bather who inadvertently treads upon the spot receives a charge which literally knocks him over. Imagine a colony of torpedoes at Newport, Cape May, or Long Branch!

In the early days of electrical science there was, of course, much discussion over the Torpedo. Was its shock really electrical, or due to some different force? This question has been thoroughly answered. All the leading phenomena of electricity have been observed in the discharges of this fish. Walsh transmitted the stroke through wires, Father Linari obtained a visible spark,

and John Davy (brother of Sir Humphrey Davy,) decomposed water by its means, and magnetized steel. A female specimen, rather languid, sixteen and a half inches by seven in dimensions, with one shock magnetized feebly four bars of steel weighing seventy-five grains, and powerfully two small sewing needles. One of the latter acquired the property of sustaining three times its weight of iron. In a general way the discharge resembles that of a Leyden jar; the positive pole of the battery being at the back of the fish, and the negative pole at its belly.

What sort of an apparatus does the Torpedo employ? This question has been pretty well answered by the investigations of Hunter, Letheby, Matteucci and others. Especially to Matteucci are the heartiest thanks of the scientific world due. The electrical batteries are two in number, arranged systematically, one on each side of the head. At first sight they seem to have the structure of honeycomb, being made up of many irregular prismatic columns, each about an inch and a half long. These prisms, which are generally hexagonal or pentagonal in form, although the shape is not always clearly defined, lie closely side by side; about four hundred and seventy in each battery. This is in a fish of ordinary size; but in the seventy-three pounder, already mentioned, there were eleven hundred and eighty-two of these columns upon either side. On close examination each prism is found to consist of many little cells, sometimes nearly two thousand in number. These minute cells are filled with a solution of what is apparently albumen, and are separated from each other by wonderfully thin membranes, every one of which is connected with a fine nerve fibril. These are the elements of the battery; and each prismatic pile, containing its hundreds or thousands of them in the space of an inch and a half, seems to form a kind of battery by itself, capable of discharge apart from the rest of the organ.

Connecting the batteries with the brain of the fish are great bundles of nerves, which have excited much astonishment among physiologists. What an enormous quantity of nervous energy the Torpedo must have, and how little of it goes to help carry on the truly necessary functions of life! It is almost all expended in the support of the electrical organs, which are not by any means indispensable to the fish. The Torpedo can be deprived of them, and

still seem to perform all the processes of life, nearly, if not quite as well as ever. They are luxuries to him, and not necessities of existence. Upon the integrity of these connecting nerves depends the electrical power of the creature. If they are severed, no farther discharges are possible. If but a few of the nerves are cut, the parts of the battery with which they communicated are rendered inactive. And if one fibre only is irritated, no part of the organ save that with which it connects is discharged. These facts, with many others of importance, have been made clear by Matteucci, who made vast numbers of experiments upon living Torpedoes. He removed parts of their batteries, examined their brains, dissected their nerves, excited them with artificial electricity, and tried them with poisons. In an article like this it would be impossible to do full justice to his valuable results. Suffice it to say that the battery of the Torpedo, or of any other electric fish, is an instrument for converting nervous into electrical energy; and that a part of it, a single prism, or even a single cell, can work as perfectly, though of course not as powerfully, as the whole. A few more words are needed, however, with regard to the uses of the battery to its owner. Some of these may be easily seen at a moment's reflection, namely its uses for offense and defense. The Torpedo captures its prey and repels its enemies with one and the same weapon. Still other possible uses of the battery have been suggested by Dr. Davy. He observed its connection with the nerves of the stomach, and found that digestion was almost, if not wholly arrested in a fish worn out by many successive discharges. Hence he concluded that the surplus electricity of the creature, when the latter was at rest, might in some unexplained manner go to aid in the digestion of its food. Furthermore he suggested that the Torpedo, when buried in the mud, might use its electrical power for the decomposition of water, in order to obtain fresh supplies of oxygen. Both conjectures are plausible, and deserve more notice than they have ever received.

More interesting than the Torpedo, being larger, stronger, and even stranger in its anatomy, is the Gymnotus electricus, or so-called "electric eel." This extraordinary fish, which abounds in many of the rivers and fresh water lagoons of Guiana, Venezuela, Colombia and Brazil, seems first to have attracted the attention of Europeans during the latter part of the seventeenth

century. But it was very long before scientific men had any opportunity to study its habits and peculiarities. In 1775, however, a lively specimen was carried by a sea-faring man to Philadelphia, where it was carefully examined by Dr. Hugh Williamson. He described it as being much like a common eel in its outward appearance, about forty-three inches long, and two inches thick near the head. Small fishes placed in its tank were killed by a single shock, without being touched bodily, and then eaten. Many experiments were made upon the strange creature, and its remarkable power was identified as electrical. About the same time another specimen reached London, where it died, and was dissected by the famous John Hunter; and early in the present century a third Gymnotus was carried to Sweden, and examined by Fahlberg. A very little later, Humboldt, traveling in South America, studied the habits of the fish under the most favorable circumstances, and gave us almost all we know concerning its domestic peculiarities. Since that time a number of living Gymnoti have been transported to Europe, where they have been subjected to a great variety of experiments. One fine specimen, which was many years ago on exhibition at the Adelaide Gallery in London, was for a time placed at the exclusive disposal of Faraday, who studied it with his usual ardor and enthusiasm. With its discharges he made magnets, effected chemical decompositions, and obtained visible sparks; proving conclusively their electrical character.

In size and appearance the Gymnoti vary a great deal, there being probably several species. The average length is about thirty-one inches, although Humboldt measured some which were over five feet long. Other travelers have heard the natives speak of eels twenty feet in length, giving shocks instantaneously fatal. If the natives were more habitually truthful this would be easier of belief. Humboldt heard of a small, black, very powerful variety, inhabiting the marshes of the Apures, but saw none of them. Those which were caught in his presence were of a fine olive-green color, with two rows of spots extending symmetrically the whole length of the back. A fish forty-six inches long weighed twelve pounds.

Humboldt's description of the capture of Gymnoti is so wonderfully vivid that we quote his own words. Izaak Walton would

hardly have appreciated such fishing. At the outset the Indians had driven about thirty wild horses and mules into the pool where the fish were.

"The extraordinary noise caused by the horses' hoofs makes the fish issue from the mud, and excites them to the attack. These yellowish and livid eels, resembling large aquatic serpents, swim on the surface of the water, and crowd under the bellies of the horses and mules. A contest between animals of so different an organization presents a very striking spectacle. The Indians, provided with harpoons and long slender reeds, surround the pool closely; and some climb up the trees, the branches of which extend horizontally over the surface of the water. By their wild cries, and the length of their reeds, they prevent the horses from running away and reaching the bank of the pool. The eels, stunned by the noise, defend themselves by repeated discharges of their electric batteries. For a long interval they seem likely to prove victorious. Several horses sink beneath the violence of the invisible strokes, which they receive from all sides, in organs the most essential to life; and stunned by the force and frequency of the shocks, they disappear under the water. Others, panting, with mane erect, and haggard eyes expressing anguish and dismay, raise themselves, and endeavor to flee from the storm by which they are overtaken. They are driven back by the Indians into the middle of the water; but a small number succeed in eluding the active vigilance of the fishermen. These regain the shore, stumbling at every step, and stretch themselves on the sand, exhausted with fatigue, and with limbs benumbed by the electric shocks of the Gymnoti.

"In less than five minutes two of our horses were drowned. The eel being five feet long, and pressing itself against the bellies of the horses, makes a discharge along the whole extent of its electric organ. It attacks at once the heart, the intestines, and the caeliac fold of the abdominal nerves. It is natural that the effect felt by the horses should be more powerful than that produced upon man by the touch of the same fish at only one of his extremities. The horses are probably not killed, but only stunned. They are drowned from the impossibility of rising amid the prolonged struggle between the other horses and the eels.

"We had little doubt that the fishing would terminate by kill-

ing successively all the animals engaged; but by degrees the impetuosity of this unequal combat diminished, and the wearied Gymnoti dispersed. They require a long rest and abundant nourishment to repair the galvanic force which they have lost. The mules and horses appear less frightened; their manes are no longer bristled, and their eyes express less dread. The Gymnoti approach timidly the edge of the marsh, where they are taken by means of small harpoons fastened to long cords. When the cords are very dry the Indians feel no shock in raising the fish into the air. In a few minutes we had five large eels, most of which were but slightly wounded. Some others were taken, by the same means, towards evening."[3]

Humboldt also speaks very strongly about the violence of the shock which a large Gymnotus can give. He imprudently placed both feet upon a specimen just taken from the water, and received a stroke which left for the remainder of the day a severe pain in his knees and in almost every joint. No wonder that the Indians dread such formidable creatures.

We call the Gymnotus an "electric eel," but the expression is incorrect. Although it bears a strong superficial resemblance to an eel, a dissection reveals immense differences. The essential portions of the fish, that is, the parts necessary for life, are quite small—the great prolongation of its body, to which it owes its eel-like appearance, being due to the bulk of the electrical apparatus. This apparatus consists of two sets of organs, and occupies a length of twenty-five and a half inches in a fish thirty-one inches long. Like the battery of the Torpedo, it is made up of cells filled with albumen and separated by thin membranes, these membranes being connected with nerves and blood-vessels. The batteries of the Torpedo and Gymnotus differ, however, in some minor particulars, especially in direction. In the Torpedo the cells are arranged in vertical columns, so that poles are formed by the back and belly of the fish; but in the Gymnotus the cells are horizontal, thus placing the poles at its head and tail. When the fish coils itself about its prey the shock passes in a direct line between these two extremities. In most points, however, the electrical organs of the two fishes are similar. They are discharged volun-

[3]Humboldt's Travels. Bohn's edition, vol. II., p. 114.

tarily, easily become exhausted, and depend for their vigor upon a connection by many nerves with the brain. Few of the differences, after the one already mentioned, can be regarded as essential.

Two species of electric fishes remain for us to notice, both belonging to the Siluri. One, the Malapterurus electricus, is found in the Nile, the Senegal, and the Gambia rivers; while the other, the Malapterurus Beninensis, was discovered in Old Calabar. The first-named species, called Raasch or "thunder fish" by the Arabs, has long been known. It varies from eight to twenty-one inches in length, has a smooth skin, and bears a family resemblance to its American relative, the common horn-pout, bull-head, or cat-fish. This resemblance is not remarkably strong. The shock which this species gives is not very powerful, when compared with that of the Gymnotus or Torpedo, and seems to serve only for defense, being too weak for killing prey. Nevertheless it is vigorous enough to bear transmission through a moderately long rod of iron. The Malapterurus Beninensis, on the other hand, though smaller, is more powerful. It is not often over four inches long, although sometimes it grows to the size of a herring. A specimen only two inches in length can give a shock which may be felt from the hand to the shoulder. Strangely enough, its electrical properties are used by the negroes medicinally. A sick child is either given a live specimen to play with, or else is placed in a vessel of water with two or three of the fishes. The Gymnotus also has been introduced into medical practice, especially at Surinam, and a surgeon of Essequibo, Van der Lott, wrote a treatise upon its therapeutic applications. This, however, is not so remarkable as that the ignorant savages of Old Calabar should have hit upon a remedy which our experienced physicians are hardly more than beginning to appreciate.

One rather laughable incident is recorded relative to the Malapterurus Beninensis. Mr. W. C. Thomson, of the Creek Town mission, owned a tame heron; which, caught when very young, had never done any fishing for itself. One day a number of small live fishes were purchased for its food, and among these there chanced to be one of one of these little electricians. The heron had never seen such a creature before, was ignorant and unwary, and at a single gulp swallowed the new-comer. That

heron was decidedly astonished. It uttered a violent shriek, and was thrown heavily backward. After a time it recovered, but it could never again be induced to touch a Malapterurus.

The battery of the Malapterurus is quite remarkable, and differs very essentially from that of any other known electrical fish. It forms a spongy layer beneath the skin, enveloping, as in a bag, the whole body of the fish, excepting the fins and the extreme end of the snout. From the body itself it is separated by an insulating layer of fat. Examined very closely it is found to consist, not of cells arranged in regular columns, but of cells formed by the interlacing in every direction of many of their membranes. These cells are vaguely octahedral in shape, and are filled with an albuminous liquid. In consequence of this peculiar structure of the battery, the Malapterurus emits its shock in all directions, instead of in a line between definite poles.

There are doubtless other species of electrical fishes yet awaiting discovery. But a very small part of the waters of the globe have yet been explored thoroughly. In Africa, the little visited rivers of South America, in Central Asia, the Indian Ocean, and among the many islands of the Pacific, there may be electrical fishes of great interest. Rumors of some such have occasionally reached Europe. Sailors at sea have captured fishes from which violent shocks were given. The field to be worked is large and full of promise; perhaps future exploring expeditions may furnish the material for study.

F. W. CLARKE.

WASTED FACULTIES.

THE truest wisdom of statesmanship should be to frame laws to encourage the use of unused or wasted faculties, and to promote the steady and profitable employment of the people. No nation so well understands this policy as the French, as exhibited by such amazing recuperation, after devastating and almost annihilating wars. Employment encourages thrift and creates taxable property, both of which are vastly important to social progress and national prosperity. Mankind well understand the bane of idle-

ness, for it has long been the text for many a trite sermon. Generally idleness is distasteful. Most men like to be busy, usefully and profitably busy. The human race is organized for action, and finds its highest pleasure in activity.

Legislation can do much to prevent the enormous waste of human energy, of wasted faculty. The subject is well worth the closest study of the most enlightened intellects. Unused faculties should universally be made available in some one of the thousand varied channels of usefulness, to which they severally may be found best adapted. The people all should be encouraged, by wise legislation, to become a vast hive of busy bodies, either of brain or hand.

As the world is now organized, there is a sad lack of opportunity for the exercise of all grades of faculties. The channels of industry are blocked and gorged. The earth teems with raw material, awaiting the magic of labor and capital to mould and fashion into usefulness; but labor stands idle in the market-places, and capital lies piled up uselessly in banks. To-day millions of men are either in enforced idleness, or are unprofitably employed. The waste of productive energy, of unused faculty, may be counted by the daily loss of millions of dollars; and yet, vast as this loss is, it is but as an atom, in comparison to the great demoralization of society by idle habits. Want of occupation for the faculties leads to discouragement, and too often to hopelessness and despair. Misery, suicide and crime follow in its wake. It ruins families, overflows alms-houses and charitable institutions, crowds prison houses and penitentiaries, and supplies ready victims for the gallows!

The world is not over-populated, and certainly its crude products are not all utilized. Properly organized, there should be ample room for the exercise of all grades of faculties, from the lowest to the highest, without conflict and without pressure. Evidently a great organic law is violated, and society is paying a heavy penalty in the loss of material wealth by wasted faculties, and in the demoralization to society from untrained habits. Violated law however contains its own curative germs, and in time these evils will be remedied.

At present, the difficulty seems to be an excessive production beyond marketable wants. No doubt the constant improvement

in labor-saving machinery, adds much to embarrass and complicate the problem. One man, with machinery, does to-day what would have been the work of a hundred, fifty years ago, This ease of production, by machinery, soon gluts the markets. The *consumption* of manufactured products, has not kept pace with their rapid *production by machinery*. As a consequence, unhealthy competition, striving and struggling amidst a large over production, establishes unprofitable prices. Then the spindles, the workshops and counting-houses are brought to a stand-still, and labor is compelled to wait as best it may, through distress and idleness, until consumption has over-reached production, and new life is infused into a profitable industry. So it is, that these uneven pulsations of activity and idleness, follow each other in continuous succession. Now, exhausted markets stimulate excessive production to supply urgent wants, and then the quick action of machinery prostrates and paralyzes these markets, by a too rapid production.

The real want is a regular, steady-profitable, daily industry, *in broader channels*, to engage the faculties of *all* workers, and not these spasmodic throbbings of industry and idleness. This must be accomplished by creating *a larger area, a wider range of consumption;* for it is clear, that a more general demand for the productions of civilized life, will call for a more enlarged use of the faculties to produce them.

Mankind do not hastily break loose from old lines and grooves of thought. It is well that it is so, for the well-being of society, or else all would soon be confusion and chaos. Still, in many things, the world has outgrown the breadth of an earlier civilization. Shackles and restraints have been thrown off. Wider views, one by one, have taken the place of narrowness and prejudice, and sooner or later, the gravest consideration of mankind will be how best to employ wasted faculties.

By many it is considered a dangerons encouragement to extravagance to ask, for the masses, a more diffuse, a wider consumption of the products of industry. They confound a general elevation of the masses, and the more enlarged demands of a higher organization, with the extravagance and recklessness of the dissipated and untrained. They forget that the most enlarged consumption of the products of industry is the surest token

of human progress, and that the greatest safe-guard to society are the surroundings of advancing civilization. He whose hand or brain is busy in the ministry of usefulness, for the comfort or embellishment of life, cannot be very vicious or degraded. The brigands on the moral highways of the world, are not hewn out of such material. They do not come from refined homes, whose inmates are the devotees to trained industry, but are mostly the fungus growth of wasted faculties begetting a low moral nature, and have been entailed upon society for centuries like loathsome hereditary disease. A leprous plague, or an infectious fever, receives prompt attention by man, to ensure its speedy abatement, and yet wasted faculties for generations have been allowed to bequeath an inheritance of demoralization. How strange that moral, more hurtful than physical infection, should be so long passed by and over-looked! We forget how mutual is our dependence on each other. The cultivated, the industrious, the prosperous, must all in some degree come in contact with the ignorant, the lowly, and even the vicious—in domestic offices and in the varied avocations of life. As the average tone of society is surely raised or lowered by the quality of individual influence, merely in a selfish view, it is of the highest moment to us, and to our posterity that this average shall be elevated. A more general refinement is of inestimable value in creating an enlarged field for industry, and so employing all the faculties healthfully throughout the world. By it, the race is stimulated to moral improvement, and through its influence, the various grades of immorality, which are mainly the outgrowth of idleness, are curbed and checked.

It cannot be denied that this social advancement is the general, and instinctive craving of humanity. It shows itself in a longing desire for promotion; but the great problem is to know how to gratify this craving, without pulling down and tearing up old and tried land-marks. Like most vital questions, its statement is easier than its solution. The day, however, is not distant when the influential and powerful will be compelled to meet and grapple with it earnestly and intelligently.

The love of power has always been the most serious drawback to the solution of this question. In all ages, power has dominated over the weak. Its reign, unlike that of kings, has been an un-

broken dynasty from the very beginning. No race, or time is peculiarly responsible for its tyranny. It springs spontaneously in the breast of man. It usually comes hand in hand with the concentration of capital and wealth. It is most often for the acquisition of power, that wealth is so eagerly accumulated, long after it has ceased to gratify all other human desires. Labor has at all time watched, with a jealous eye, the growth of capital as the exponent of power, and neither of them have fairly estimated the true value of the other. Each has always recriminated the other, and to this day, both stand glaring and defiant. Labor and capital are not necessarily antagonistic, any more than the hand is to the foot, or the eye to the ear, but are vitally essential to and dependent on each other. It may be the province of this generation to solve the complex problem between labor and capital, and to work these discordant elements into order and harmony.

As a first step in this march of progress, it is important to society that capital *at a low cost, shall, not spasmodically, but at all times,* be *freely directed to quicken both mental and physical production,* because in that way the faculties are most largely developed in creating and supplying the largest area of human wants. Capital, and labor, are the handmaids to material prosperity and civilization, through the use of the faculties; or in other words wealth is the result of industry, and capital applied to the crude products of the earth, and is enlarged in exact proportion to the exercise of the faculties. The undeveloped virgin soil, the home of naked savages, is valueless, until the industry of a more or less refined civilization has given an impetus to production.

To quicken production, a uniformly low rate of interest is most essential. It is not the scope of this paper to discuss how best this end shall be attained, but the fact is very certain, that usury and high interest, discourage production, and absorb the bread of industry. He who invests, and reinvests a moderate sum, at only six per centum per annum interest, during the period of an ordinary life, generally aggregates larger, and surer, gains than the man who adds his own industry to a like sum, for a similar period, in the chances of business. This assertion is too sadly the fruit of universal, and bitter experience, to need proof. The deduction

is, that interest rules too high. It is discouraging to industry that loans shall, in the large average, realize better profits than the combined force of brain, hand and capital. It paralyzes effort, and in a thousand ways is harmful to society.

With a *steady, low rate of interest,* industries are fostered; and being fostered, the field is constantly widened. With their growth, they are more and more interchanged, the one with the other. Markets are developed, and wants are created in new directions. The simple requirements of the rustic cabin are changed to aspirations for the various refinements of civilized life, and the premium paid for their attainment, will always be the increasing impulses to industry. Thus the dormant faculties will be exercised, activity will take the place of sluggishness, consumption will be increased, and, as a natural consequence, production will be enlarged: for production and consumption stimulate each other. Each of these, in turn, will furnish fresh nourishment for growth, just as daily food vitalizes the blood and renews the life.

To realize this most wonderful Utopia, as some believe it to be, human labor must be *more largely compensated* in order to furnish a sufficient purchasing power. The products of industry, to be freely marketed, must meet a universal consumption, and this enlarged ability to purchase *can only come* through the increased rewards of labor; for the *general consumption by the masses*, can alone be relied upon, to furnish such large, and stable markets, as will be required to insure the greatest impetus to productive industries. The most lavish, and even wanton extravagance of the present rich, can never provide a market, equal in permanence and breadth, to the vast but moderate consumption by the whole people.

While actual human labor will be advanced, automatic machine labor will cost less and less, thereby largely depreciating the general cost of production. For instance, a one hundred horse-power engine, working automatic machinery, under the direction of five or six men, may in one day, perform what would otherwise be the labor of two or three thousand hands, and while the wages of the few men, the fuel, and other requirements, will be largely increased, yet all this increase, averaged over the large production, will constantly diminish its cost, as machinery is still further

improved and perfected. Invention, it is true, will supplant human labor more and more, but still the constant expansion of consumption, will give full scope to the faculties of man in newer, and wider avenues. Commanding a larger remuneration for his labor, his ability will be increased, to interchange the products of his faculties, for the cheapened products of machinery; and in this way the comforts, the refinements, the embellishments of a higher civilization, will be widely diffused, while the wasted faculties will be utilized, and humanity will be more, and more elevated.

This is no Utopia. It is the channel towards which mankind are surely drifting, and it is the height of folly to shut our eyes to an influence so beneficial, and which so plainly stares us in the face. It is no monstrous horror to chill the blood, but is simply the working out of a great organic law, which has been violated through darkness and prejudice. Interwoven, and blended as we are together, the universal elevation of the whole race, should be hailed by all, as a sure and certain benefit to each individual.

It is for the influential to shape, and mould events and circumstances, so as to promote the best use of the faculties and energies; to lead, not to follow, the coming revolution. To favor labor and enterprise in every possible way, but particularly by encouraging cheap capital, so as to speed progress at the anvil, the mine, the loom, the workshop. It will infuse a new inspiration. Wealth, being largely the product of highly rewarded labor, and acquired then with greater ease, will be more generally diffused, and less and less prized. Its standard of value will be lowered. The virtues will come to the front rank above riches or power. From uncertain speculators, usurers, extortioners, the transformation will be to useful workers, because the best use of the faculties in labor, will be most highly honored, and rewarded. Under such auspices, the world will make wonderful strides in goodness and greatness, and in whatever ennobles man.

Then banishing petty prejudice and narrow selfishness by encouraging the utmost use of wasted faculties, let the clarion watchword of the nineteenth century be "the greatest good to the greatest number," and the marching hosts through succeeding ages, will repeat the cry, until at length disenthralled and redeemed humanity will at last fulfil the crowning glory of creation.

THE MONEY QUESTION AGAIN.

THE industry of men is so largely developed by the division of labor and the constant exchange of commodities and services that many tools and agencies not at first required have become necessary. We propose to discuss money, its substitutes and the devices of the credit system, as we believe the importance of the former is over-estimated and the latter not appreciated.

The agency of money is no more essential to the idea of an exchange of services or commodities than wagons, roads, canals, boats, cars, railroads or steamships. The exchange of commodities is just as effectual when made directly or through the agency of money of account as when actual money is used or when the exchange is made by barter. The exchange of commodities being the object in view, every advantage, facility, security, and economy should be resorted to in accomplishing that object. We must insist, however, upon keeping the object and the agencies of effecting it separate and distinct, as necessary to having a clear view of the whole subject. For while the advantages of a common medium of real value, for which men can safely sell anything they have, and with it as readily purchase anything they require, cannot easily be over-stated, it must not be forgotten that money is not of the essence of an exchange.

Gold, whether in coin or in bars of known purity and weight, is the best material to be used for money, both because it has intrinsic value and because it is acceptable to all men as money. But as it is an expensive and troublesome instrument of exchange, and because it bears so small a proportion to the value of the annual product of the industry of man—the quantity in no country probably exceeding one-tenth of the value of the gross annual product of its industry—it has been found absolutely necessary to have various devices and substitutes for it. And since we must have substitutes for money in order to hasten the societary circulation and to enable man to control matter, it is very important that we should have those substitutes in which we find the least danger.

There are three distinct forms in which a paper currency can be established: 1. As issued by the State; 2. By a single bank, or by several banks restricted in number; 3. By banks established

on the principle of freedom and competition. The two main points to be kept in view in deciding which of these systems is the best, are first, the validity of the note, that is, its constant acceptability by the people as a valid tender in payment of debts and all transfers of property; and second, the steadiness of the measure of value. A State currency, when made legal tender, of course attains the first of these objects fully. Both taxes and government expenses being paid in these notes, they have a value independent of their being convertible into gold. Whether there is much specie or none at all, these notes are always legal tender, so long as the faith of the State is kept. But such a currency does not insure the unchangeableness of the measure of value, for the amount of the notes has no necessary connection with the monetary requirements of the people, and therefore, gives no security that the note shall possess the same value when the time of payment arrives that it did when the contract was made.

There is great liability to excess in the issues, thus producing a depreciation of the note and an advance in the price of commodities. The increase of the issue of the notes inflates prices, creditors losing and debtors gaining. The commercial disturbances that follow the contraction of the circulating medium depreciate the price of commodities, so that the whole debtor class of the community and the holders of merchandise are subjected to loss, often amounting to absolute ruin.

When State currency is irredeemable, this liability to excess and scarcity creates great uncertainty, and a spirit of gambling is generated which is inimical to the interest of honest industry, and very demoralizing in its effects upon the community at large. To men not deeply versed in the details of commerce there seems to be no insurmountable difficulty in deciding what amount of money is needed to make a country prosperous. But it is far worse than useless to attempt to enact laws on this subject. The actual quantity of money required can never be ascertained, for the wants of the people at one time far exceed their wants at another.

It is obvious that at one time, when there is peace, quiet and mutual confidence, a much less quantity of money is required to transact the same amount of business than when there is war, distrust and financial panic. It needs no argument to prove that a law which fixes the amount of currency is as hurtful as one that

gives the Treasury Department power to increase and diminish the amount of currency in circulation at will. Another objection to State currency, legal-tenders, is that the government in issuing them makes a forced loan upon the community without interest. There are times when it is eminently proper for nations to make the sacrifice, but when the cause for which legal-tender notes were issued no longer exists, the proper disposition is a conversion of them into some sort of security which shall be merely capital.

To be convinced that the currency issued by a single bank or by several banks restricted in number, is better than that issued by the State, it is only necessary to understand the national banking system of the United States, approved by act of Congress on the 25th of February, 1863.

The most important of the advantages of this system are in the peculiar species of capital, which serves as an ultimate fund for the redemption of the national currency, namely, United States bonds; and in the uniformity of the currency.

Both the first and second forms in which a paper currency can be established secure the validity of the note at all times, but there is nothing to insure the steadiness of the measure of value.

Let us now turn to the third form in which a paper currency can be established, namely, by banks established on the principle of freedom and competition; and to that end we suggest the enactment of the following law.

Let it be enacted that the Comptroller of the currency issue to associations of individuals for the transaction of banking business, national currency to any amount, upon due proof of organization in accordance with law. That each stockholder shall be liable for losses for a sum equal to the amount of his stock. That national currency be issued to such institutions upon due proof that a deposit of United States bonds has been made with the Treasurer of the United States. That such issue shall not exceed ninety per cent. of the par value of the bonds deposited as aforesaid. That banks shall hold a reserve of twenty-five per cent. of the amount of their deposits in gold or in United States four or four and a-half per cent. bonds. That said reserve shall never be kept with other banks. That banks shall not be required to hold a

reserve for the redemption of their circulation—that being secured by the United States bonds deposited with the Treasurer of the United States, by the liability of the stockholders for losses, and by the capital of the banks not invested in United States bonds. That banks shall receive interest at the rate of four or four and a half per cent. per annum on the bonds deposited as aforesaid. That banks shall be subject to no national tax. That banks shall pay no interest on deposits. That banks shall redeem their circulation on presentation, in sums not less than fifty dollars, in gold or in United States four or four and a half per cent. bonds, at the option of the bank. That the Comptroller of the currency, or any sub-treasurer of the United States, shall issue currency to the banks in times of financial panic in amounts not less than fifty thousand dollars, upon due proof of a deposit of United States bonds. That banks receive no interest on the United States bonds deposited to secure the extraordinary issue of currency. That the legal tender notes be withdrawn as fast as National Bank notes are issued. That nothing in this act shall be construed to authorize any increase of the principal or interest of the public debt of the United States.

Such a currency would be valid and acceptable at all times, and the amount being unlimited, the steadiness of the measure of value would be preserved; that is, the notes would have the same value at all times. Being redeemable, the currency in circulation could not be increased while the monetary requirements of the people remained unchanged, and so the measure of value would not be depreciated; and as there would be nothing to prevent the increase of the currency in circulation when the monetary requirements of the people increased, the measure of value would not be enhanced. The amount of the currency and the requirements of the country would always be commensurate; that is, the currency would increase and diminish according to the natural law of supply and demand.

It should be remembered that men do not desire money, nor use money, nor any of the substitutes for it, except for the transaction of retail trade, the payment of wages, the payment of balances due from one community to another, and as a standard to be used in case of disagreement. The business men have for many years made their purchases upon their own credit, and they thus

issue hundreds of millions of dollars of commercial paper every month. All that concerns the relations of debtor and creditor upon this paper is settled by the aid of the banks and the clearing houses. In all large transactions the people give and receive checks upon the banks.

Whatever be the utility and importance of the precious metals as a medium of exchange, or an equivalent, their utter insufficiency to accomplish the payments of the present day shows that, though they may never be wholly dispensed with in commerce, their efficacy, as means of payment, has been so far transcended by other modes of payment, that nothing can be more fallacious than to regard them as the only model. All past experience shows that in specie times, whenever an excessive demand has been made upon the banks to pay their deposits and to redeem their notes, they were obliged to suspend payment. Therefore it is necessary to provide a currency that at all times will be acceptable to the people. This can be accomplished in no way so well as by a national bank currency, secured by the indebtedness of the United States, which, in turn, is payable at maturity in gold. Banking established on the principle of freedom and competition, would extend the advantages of the credit system into all parts of the country, and thus hasten societary circulation by fostering domestic exchange.

We believe that the third form in which a paper currency can be established is the only safe one, and the only one that will give unity and simplicity, where otherwise there would be diversity and severance.

But whatever system of national finance may be adopted by our nation, if it be sound and comprehensive, it must involve some relations with the domestic exchanges of the country. The internal exchanges of the country are accomplished with a vast amount of unnecessary friction; friction that arises not from the cost of transmitting money, but from want of concert. Exchange, foreign and domestic, is only a mode of setting off debts against debts, and when its operation becomes concentrated in a few hands, the friction of the exchange is small and the business is transacted with facility. A system is needed which only the power of the national government can give. Our domestic exchange involves the adjustment of the debts of those who, though

of the same country, are yet so remote as to require the agency of third parties. As effected by money of account it is almost as simple as the mode of adjustment when the parties live in the same city or town, for both are accomplished by means of banks.

The adjustments of the business men of our cities are made through the banks by means of clearing houses, without either much cost or trouble. The banks of a city, by means of a clearing house, actually become parts of one institution, and the work is done smoothly, where otherwise there would be friction. We refer to this, however, only by way of illustration; for while the banks of our cities put up securities with the officers of the clearing house to protect the solvent against the insolvent banks, a national clearing house, providing a national system, can only be provided for by national legislation.

If the banks in our cities now find themselves compelled, from motives of economy and facility in business, to resort to the processes of a clearing house, the same reasons apply, with far greater force, to the settlements arising out of domestic exchange. Each one of the cities and towns in the nation has its daily maturing claims on all or a portion of the others; each place, leaving out of view individuals, may be said to have a certain claim upon all the others, and to be subject to claims from all.

If the amounts were known it could be stated whether, upon any particular day, the balances were in favor or against any one place with all the others. These settlements are generally based upon commercial transactions which have gone before, and we know that the commodities have been sent from the West to the East, and from the East to the West, and likewise from South to North, and from North to South, and that the drafts and bills of lading exactly represent the amount of transactions, and the market values involved; but we do not know the sum of all these. We do know, however, that in the main the commodities sold and transmitted pay for each other, and that the amounts to be paid are comparatively very small; we know that the debtors in each community or State pay the creditors in that community or State; and we know that it is accomplished by the operations of domestic exchange and the agency of the banks. But this business, as now effected, involves needless expense, time and trouble;

incomparably less, however, than when the old system of State banks existed.

It must be evident that this adjustment between distant cities can be made with more or less facility, according to the number engaged in it. If one thousand are engaged on each side, they would all be claimants, because they all would be corresponding on the subject. If the numbers engaged were reduced from a thousand on each side to one, the complications and expense would be reduced in proportion. To increase the number of banks and bankers is only to increase the confusion and expense, unless they are all governed by a national system, under the supervision and protection of the National Government.

The people engaged in this domestic exchange need a new facility; the banks and bankers who are their agents need it still more; they need an institution which should approximate to the operation of a clearing house.

If any bank or banker in Philadelphia, who discounts or purchases a bill or note payable at any other place, could at once send it to an office of exchange in that city, the books of that office would show each day the claims of Philadelphia upon all the rest of the country; and its correspondence would show the claims of all the rest of the country each day upon Philadelphia; and the same of such an office in every other city. The whole business of domestic exchange might be thus concentrated in every city at one office, in which would be exhibited daily the debts and credits of that city and its dependencies, to and with all others.

It is obvious that offices of domestic exchange thus representing whole cities or districts, and concentrating their debts and credits, could settle their mutual claims with a facility nearly equal to the operations of a local clearing-house. The aggregate indebtedness of the cities, towns and districts each to the other, would be discharged as an aggregate liability. Each bank or banker concerned, would have only to account with their customers according to their relations with each other; amounts due by individuals in Philadelphia to persons in New York would be placed, in Philadelphia, to the credit of those to whom persons in New York were indebted; and so with individuals in New York creditors or debtors of persons in Philadelphia; both classes would make and receive their payments in their own city. The

office proposed would, in connection with the telegraph, in a few hours change the indebtedness between individuals residing in different States, or cities, into indebtedness between parties in the same vicinity, neighbors and customers of the same bank, and well known to each other.

By the agency of offices established for the express purpose of aiding domestic exchange, the government could distribute perfectly, promptly, at the least risk, and with the least expense, to every required point, all the public revenues; and at the same time the domestic exchange arising from commercial operations could be facilitated and economized to the utmost practicable degree.

A public institution designed to regulate and assist the domestic exchanges of the country, with all the ramifications and branches to make it efficient, would be a boon to the industry and he trade of the country, the value of which would be almost beyond estimate. It would need to have a close and systematic connection with the financial system of the United States, that the offices of the public treasury, and the offices of domestic exchange, might operate together, so far as needful, and lend mutual support in every exigency, and that their information might be in common.

This can be done with great effect, without departing from the true limits of a proper system of national finance, under or rather with our system of national banks. It would bring permanently within the power of the general government that control of the currency of the country which the present system of banking made possible. The measures and financial policy directed to this important object might, we fully believe, be so shaped and so managed, as to secure the approval of all the best banks in the country, and still more certainly that of their customers.

An institution designed to regulate and aid the domestic exchanges of the United States, and to accomplish the transmission and distribution of the public revenues free of expense would have to receive its shape and power from the general government.

For its general features we make the following suggestions: A capital subscribed by any or all banks, under the national system; each bank subscribing ten per cent. of its capital. The subscription to remain permanently open to all banks. To have as

many offices as may be needful, one at least in every State, and one in every town of 10,000 inhabitants; no one of which to have power to lend money, to keep deposit accounts, to discount or purchase commercial paper of any description, or any other security. The capital to be strictly applicable to the payment of the balances of domestic exchange, and to afford the requisite facilities for the transmission and distribution of the public revenue.

The office in New York to have the special direction as to the payments of balances between the offices, and as to the transmission and distribution of the public revenue in accordance with the requirements of the proper officers of the treasury. The affiliation of all the offices to be so complete as to make one body of the whole, all property and all liabilities being in common. Each office to receive for collection from the banks every description of paper security payable at a different place from that at which it is received.

The offices to make daily settlements with each other; where this is not practicable, to make them as often as the course of business and the mails will permit. The accounts of the offices, as against each other, to be first balanced, and the difference adjusted or paid. The proceeds of collections to be then distributed among those who had deposited claims for collection, which had been duly paid at other offices. The charge for collection not to exceed half of one per cent., the whole to be under the control of the Secretary of the Treasury. Dividends to be declared every six months.

An institution of this kind would rapidly commend itself to the whole country by its usefulness and economy. It would be perfectly safe, because with a large capital of National bank notes on hand it would at all times be able to make prompt settlement. It would be a mere collector of the debts of others, never a purchaser of any. It could, therefore, never fail but from the dishonesty of its officers, and the capital would be so subdivided, and the accountability so strict, that no serious inroad upon it could occur from fraud or unfaithfulness. It would be purely the servant of the people. It would be no monopoly, for the subscription book would be permanently open to all banks. The national bank notes would not be idle, for the whole stock would be in motion as a medium of payment. It would be truly

national, because an interest in it would be always open to every bank.

To make this national clearing-house useful, it is necessary to have a uniform and free system of banking.

With a system of free banking established as suggested, money of account would be used not only for local purposes but also for domestic exchange, and no more currency could be kept in circulation than trade demanded. We believe that with a high protective tariff, with a perfectly safe currency, and with a comprehensive system of domestic exchange, a return to specie payments would be possible at an early day, and that soon our public indebtedness would be held at home.[1]

THE BLUNDERS OF REFORM.

The problem of getting the right man into the right place of power and responsibility—of securing a government that shall represent the better self, the brighter intelligence of the people,—is one that has not yet been solved on this continent. It is one by whose solution or failure of solution any system of political order must stand or fall. If the experiment whose centennial comes not in 1776 but in 1789, is to be a success, if the American people are not only to be independent as a nation of all foreign governments and powers, but also to perpetuate that independence under the forms of a Federal Republic, as adopted thirteen years later than their Declaration of Independence, then there must be a great reform in the actual working of our political institutions, and that before many years. For it is of no use to deny that the enthusiasm and admiration that were once felt for the methods of our political order are very greatly impaired, if they are not actually vanishing out of our midst. The younger generation especially share but slightly in that enthusiasm and admiration. While they cannot be said to heartily approve of any other existing system, and still less to desire to transplant any other into our midst—while they are not monarchists, nor imperialists, nor even aristocratists, they are not heartily affected

[1] In our remarks upon a National Clearing House we have followed the late Stephen Colwell.

toward our semi-democratic Federal system. Worse than any definite political heresy is the fast-spreading cynicism, which hopes for no good and looks for no improvement,—which looks on this or that evidence of political corruption, not with surprised indignation, but with the indifference that takes these as a thing of course. Even Prof. Lowell, our greatest poet and not the least incisive of our thinkers, who as late as the second series of the *Bigelow Papers* (published during "the late unpleasantness"), was full of hearty enthusiasm for the great experiment of political equality and self-government; now takes up the burden of the nation's politica land moral desolation, and has no word of hope or cheer for a better future.

We cannot write in either this cynical acquiescence of a bad present, or this hopelessness of a better future. It is our conviction that the worst mischiefs of our political life are caused by the want of adaptation between our political machinery and the actual life of the people, and therefore we believe that it is quite within the reach of reformatory plans to correct those mischiefs, and to restore a healthier tone to the whole public life of the nation; and we further believe that not all but some of the worst faults in our political machinery were the outcome of reformatory plans that were ill-advised in their conception, and that now need reconstruction and revision.

The greatest of these mistakes was in the construction of a system of government that makes undue demands upon the time, the attention, the public sympathy of the people. This mistake enters into the Constitution of the United States itself. The authors of that document had not learned the truth that is now a common-place of political science—that the will of the people is often best brought to bear in the management of the government, when it bears indirectly. In the government which furnished them with the main outlines of the new constitution—the government of Great Britain—that principle of indirect influence was very fully illustrated in the relation of the Cabinet to the House of Commons; but they made no attempt to transplant the Parliamentary government to America. Instead of this, they set up an irresponsible but temporary executive, and did not even provide for the appointment of Cabinet officers as his associates in power. They gave him no representation and no seat in Con-

gress; they only put between him and the popular suffrage, a nondescript body of electors chosen by popular suffrage, and devoid of any permanent place in our political system. They left the possible cases of a dead-lock between the Executive and the Legislative power to adjust themselves, balancing a limited veto power by the power to impeach and remove. And they threw upon the people the responsibility of a frequent and periodical choice, both of the national executive and of the national congress. At the same time, by perpetuating the old colonial system of local legislatures and executives, they left to the people a large number of elections, whose importance is necessarily in the inverse ratio to their number.

The system worked comparatively well throughout the earlier period of our history, for reasons that apply more forcibly to that period than to ours. It was an age in which the interest of the people of all classes in politics was exceedingly lively. Its jural life may be said to have been the sole life that the young Republic possessed. "Eternal vigilance is the price of liberty," is a motto that they could very easily put into practice. They had nothing else to think about. They were hard-working people, but their work was of a steady, plodding sort that gave very litle scope to intellect; and the rapid societary and industrial circulation of our age of factories and railroads was still in the womb of the future. Culture in its independent, unpolitical forms, as yet was not, and its power to draw men away from the contact and turmoil of the world, was unexperienced. So of science. Even ecclesiastical interests were very weak, outside of some few districts of New England. The growth of the churches in the power they now exert over American society, reaches back not fifty years. Politics commanded the intellectual activity and the intellectual interest of the whole nation; the sort of men that now aspire to eminence in science, in literature, or even in wealth, did then as a rule turn to the political arena as offering the highest rewards to ambition, and the best exercise for their intellectual thews and sinews. And then again the restrictions upon the suffrage, which were still imposed in many States, made sure of its exercise by the class best fitted for the exercise. What was prized as a privilege is less thought of when shared by all.

But the last fifty years have seen a rapid and still progressive

change in all these respects. Other interests, not less absorbing than politics, have arisen among us, and the old-time enthusiasm and devotion to that subject begins to look a little ridiculous. Art, literature, science, religion, have been growing in their command of popular attention with every year, and their gain has been balanced by a loss in the other direction. Above all, our industrial growth, our manifold industrial enterprise and audacity, to say nothing of the rise of the speculating spirit—these have taken away popular attention from the theme that once occupied all attention. To-day our popular life is richer, more varied, more manifold than in that not very remote past, but our institutions are still suited to the old simplicity and uniformity; they still make the very largest demand on the political interest of the mass of the citizens.

Indeed, they now make larger demands upon popular attention. A steady revolution has been going forward with more or less rapidity in every quarter of the Union, in the extension of direct popular influence, and its substitution for that which is indirect. The number of officials appointed by the State executives has been very greatly diminished, and the choice thus taken away from them (especially in the case of State Judges) has been devolved on the people at large. The changes made in the municipal governments of our cities look nearly always in the same direction; and every such change, by diminishing the importance of these executive officers (governors, mayors, etc.,) has lessened the popular interest in their election. Instead of concentrating popular attention on the choice of one man, and vesting the whole responsibility of the *personnel* of the government in him, the people have been distracted with frequent elections, involving the choice of a long list of State, city or county officials. No other country under heaven makes such demands upon the time, the patience, the social discrimination of her citizens; for no other throws the appointing power into the hands of the whole body of voters, and expects them to discharge duties which require great discrimination as to the character of hosts of comparatively obscure people. For partly through the diminution of the importance of the offices, but partly also through the absorption of our people in very different pursuits, it is very rare to find the best class of citizens aspiring to the places of trust which are in the

gift of their fellow citizens. Nor does the office any longer seek the man; there is seldom such a common understanding of public spirit, as gives the community a claim to the services of men who would rather put honor upon the office than receive honor from it. In a community absorbed in the pursuit of private enterprise, it would be little short of farcical to find men of wealth and social position making unitedly such a claim upon the self-sacrifice of one of their fellow citizens, in the way that was not unusual at the beginning of the century. The form of doing this is indeed still kept in use, as being a very seemly and a very handy way of grinding private axes. But except in a few extraordinary cases, where misgovernment has been carried to an extreme that threatened business interests, there is only the form left us.

That there will be any thorough reform in these things without a general and hearty revival of public spirit throughout the land, we do not think possible. From whence such a revival will come is very hard to see. Perhaps some of these days the Christian churches may waken up to the apprehension of the truths that lie spread over every page of their Old Testament, and find that they have other work on hand than the saving of single souls. Perhaps some of our professions or businesses may at last learn that they are neither putting honor upon their work nor getting satisfaction out of it, by treating it as a mere means to make money; and finding it to be a function they possess as members of a vast body and of one another, may come to preach that doctrine to their neighbors. Perhaps we may take to heart the song of some singer, or the word of some thinker sent to be our prophet, and do works meet for repentance, getting rid of our atomic selfishness. But all these are but possibilities.

Still, as we have already said, we regard much of the mischief as arising from the lack of adaptation of our institutions to our people as they are. Even a public-spirited people might very well complain of the demands made upon them by our elective system, and what public spirit is left us is hindered from its due and rightful influence. The reduction of the number of elections by lengthening terms of office, the reduction of the number of persons to be elected by extending the appointing power of the Executive, seem to us the first steps in the right direction. The chief magistrate and the legislature of each state should be the

only persons chosen in the state; the mayor and the council the only persons chosen in each city; and in them should be vested the choice of all other officers, executive and judicial. By making the offices more important, they would also be made an object of ambition to a higher class of citizens, and their new importance would help to excite a more lively concern in the electors as to the choice of men. Indeed, it may be laid down as certain, that whatever detracts from the importance of any position in the people's gift, makes it the more accessible to corrupt and inferior men.

We would even go farther; we would again urge, as a step in this direction, the reconsideration of the status of the state governments, with a view to their reduction to a municipal footing or their abolition. We need a vigorous political life at the nation's very heart, the capital. We need to make its positions posts of the highest honor to all who reach them. Will we ever make the post of member of Congress equal in importance and dignity to that of member of Parliament, while our supreme legislature is deprived of the most important functions that inhere in the latter, and its authority and influence whittled into almost nonentity by the activity of two score of State legislatures? Till this is changed Congress need not be expected to be very much better or purer than it is; because no better men will seek its seats, and no greater care will be exercised over their selection.

It is necessary thus to repeat again and again the principle we have in view, because not only is it continually lost sight of, but its very opposite is almost assumed as an axiom by our political reformers. The recent attempts to reform the governments of various States by the adoption of new constitutions—as Mr. Henry Reed very well points out in his article in the *North American Review*—all chiefly turn upon restrictions to the power of the state legislatures. In many cases—as he shows—these attempts at restriction are utterly futile; no judge, for instance, will go behind the official record to learn whether or not a law on the statute book was passed according to all the forms prescribed by the constitution-makers. It would not be equitable for him to make inquiries on the subject which could not be made by the citizen, who has acted in good faith on the supposition that the statute was of force. But even if these restrictions were successful, they

would do far more harm than good. A citizen who respected himself would not seek a place in a legislature whom the State had solemnly muzzled as a set of biting curs; and the electors, thinking that the legislature was harmless now to do any mischief, would be less careful to seek good representatives. This, we believe, has been the actual course of things under the new constitution of Pennsylvania. The legislature has been anything but an improvement on its predecessors.

Very similar is one of the current arguments against the substitution of a national currency—such as England is soon to adopt for herself—instead of the notes issued by banking corporations. It is said such a currency may be better in the abstract than any issued by the banks; but how can we be sure that its management will always be in the hands of competent and trustworthy men? Are we not giving an immense power into the hands of a set of politicians, who, while better than the average, are not either in intellect or conscience the men to be intrusted with such large discretion? So long as we argue in that way, and act on those arguments, we will never have men of the highest intellect and conscience in the national service. The electors will not be on the alert to find them; they will not seek the office. But if once the choice of such men were to be a choice that should affect the whole commercial and financial status of the nation and its great business centres, the right men would be forthcoming: no one else would have any chance of election.

In fine, our political reform must begin at the other end. We must level up, instead of leveling down. We must concentrate responsibilities, instead of scattering them. JOHN DYER.

THE SOUTH KENSINGTON MUSEUM.[1]

It is now seven-and-thirty years ago that, influenced by the declared opinion of the public, the British Government was in the year 1838 induced to take into serious consideration the Art-edu-

[1] This "Memorandum upon the formation of the South Kensington Museum" was prepared under the direction of Mr. P. Cunliffe Owen, British Commissioner to the Centennial Exhibition, for the use of the Committee having in charge the organization of a Museum of Art in Philadelphia.

cation of the people: in that year a School of Design was established under the then President of the Board of Trade at Somerset House, having for its object "*the training of Designers to improve the patterns and designs used for manufactures.*" The progress of the undertaking at first was very slow, for in the course of twelve years the number of Branch Schools which had been established in the provinces for promoting the same object only amounted to twenty-one. The Exhibition of 1851, however, gave a great impetus to the work, for in that grand exhibition of the art-manufactures of most of the countries of the world, the comparison of British workmanship with the Art-industrial productions of other nations revealed to the Englishman, that although his handywork might well compete with any in point of honest and skillful execution, yet in respect of beauty of design it was far behind that of some other nations. The result was the formation of the present Department of Science and Art under Her Majesty's Committee of Council on Education. It was soon considered necessary to provide a collection of objects illustrating the Art-workmanship of bygone ages, not only as practised in this country, but in all the civilized nations of the earth, to serve as examples in guiding the art-education of the student. And with this view a nucleus of a permanent Museum of Works of Art was formed at Marlborough House, now the residence of H. R. H. the Prince of Wales; the objects there acquired, by means of moneys granted by the State, form part of the important collections in the South Kensington Museum, which is now the central depository of all works of art, pictures, books on Art and Education, engravings, &c., collected by the State to serve in aid of the Art-education of the public.

The following is an extract from the Introduction to the first Catalogue of the Collection; it shows the sum expended, and the various classes of objects purchased, with the reasons for their selection:

"The formation of a Museum of Manufacture of a high order of excellence in Design, or of rare skill in Art workmanship, had long been considered desirable, as well as for the use of Schools of Ornamental Art as for the improvement of the public taste in Design; and the Great Exhibition of 1851 affording a favorable opportunity for obtaining suitable specimens, the Board of Trade requested a Committee to recommend articles for purchase, and

subsequently to prepare a Catalogue, which should set forth the prices of the various articles, and the reasons for purchase, together with any other particulars it might be desirable to know in the use and study of the Collection.

"2. The funds which the Treasury allowed for this purpose were limited to 5,000*l.*, of which 4,470*l.* 16*s.* 5*d.*, have been expended in the following proportions:

	£	*s.*	*d.*
Articles exhibited on the Foreign Side of the Exhibition...	2,075	9	0
Articles exhibited on the British Side of the Exhibition.....	893	18	11
Articles exhibited by the East India Company.....	1,501	9	6
	£4,470	16	5

"3. Apportioning this amount to large groups of Manufactures, the expenditure in each will be as follows, the prices of foreign articles being exclusive of Customs' dues, &c.:—

	£.	*s.*	*d.*
Woven Fabrics.....	1,080	0	4
Metal Works.....	1,426	15	6
Enamels.....	844	12	0
Ceramic Manufactures.....	348	6	7
Wood Carvings and Furniture.....	771	2	0

"4. As a first principle in making the selections, the Committee felt it to be their duty to discard any predilections they might have for particular *styles* of ornament, and to choose whatever appeared especially meritorious or useful, if it came within the limits of the means at their disposal, without reference to the style of ornament which had been adopted. The Collection accordingly possesses specimens of many European and several Asiatic styles. Yet each specimen has been selected for its merits in exemplifying some right principle of construction or of ornament, or some feature of workmanship to which it appeared desirable that the attention of our Students and Manufacturers should be directed.

"5. Most of the examples, indeed, in the opinion of the Committee, have a mixed character. Some, like most of those from the East, illustrate correct principles of ornament, but are of rude workmanship; whilst others, chiefly European specimens, show superior skill in workmanship, but are often defective in the principles of their design. Thus, the Paris shawl, by Duche aîné (W 120,) was rewarded by the Jurors as a triumph of manufacture; but its direct imitations of natural objects appear to the Committee to be of very inferior design to the ruder scarfs of Tunis, or the kinkhobs of Ahmedabad.

"6. An attempt has been made in the Catalogue to indicate the more salient points of merit and defect in every article as far as space would permit. This of necessity has been done imperfectly, but we look forward to many opportunities occurring when

the features of the several purchases may be fully and systematically explained.

"7. Notwithstanding the indifference to principles of Ornamental Art, which is too prevalent in the present age—and even the variety of style and character in the works in this Collection affords proof of such indifference—there are signs that the existence of laws and principles in Ornamental Art, as in every branch of human science, is beginning to be recognized. Indeed, without a recognition of them, we feel that Schools of Art can make no progress. Collections of Art will, we think, be most instrumental in helping to form a general belief in true principles. It is by means of such Collections that we may hope to create a band of practical artists, competent to teach the principles of Ornamental Art, and to prove by their own works the soundness of their teaching.

"8. In forming this Collection, the Committee looked to its becoming the nucleus of a Museum of Manufactures, which may have its connections throughout the whole country, and help to make our Schools of Art as practical in their working as those of France and Germany.

"9. Already, with the desire to enable Manufacturers and Students who may be prevented from consulting the Collection to participate in the advantages of it, the Board of Trade has authorized the preparation of Colored Lithographs of some of the Examples to illustrate the Catalogue; and this decision has led to the formation of a Class of Female Students for practising the art of Chromo-lithography, who, whilst thus aiding the production of a useful work, are practically acquiring the knowledge of an art peculiarly suitable to them, and for which there is an increasing public demand.

(Signed) HENRY COLE.
OWEN JONES.
17th May, 1852. RICHARD REDGRAVE."

THE COLLECTIONS.

The Collections at South Kensington Museum now comprise—

1. Objects of Ornamental Art as applied to Manufactures.
2. The National Art Library.
3. British Pictures, Sculptures and Engravings.
4. The Educational Library, with appliances and models for Scholastic Education.
5. Materials and Models for Building and Construction.
6. Substances used for Food.
7. Reproduction, by means of Casting, Electrotype, and Photography, of objects displaying the Art-manufactures of all nations.
8. Naval Models.

These collections have been acquired by means of sums of money granted from year to year by the Parliament. This system of purchase by the State was commenced in 1838; a sum of 10,000*l.* was voted in 1840 for the purchase of examples of Art for the Schools of Design; 5,000*l.* was granted by Parliament for the acquisition of examples of Art from the Exhibition of 1851; in 1855, 20,000*l.* for the purchase of specimens; and up to the year 1860, 50,000*l.* had been expended by the State for these collections, in securing specimens, with the view of exhibiting the efforts of the artist in combination with the workman, not only in England but in foreign nations, dating from the period of the revival of the arts in Europe. Since 1860 the scope of the Museum has been much extended, and reproductions of some of the more important monuments of ancient art have been added to its collections, and the amounts voted by Parliament have been prorportionately increased.

The Museum of Ornamental Art was established in 1852, when, by permission of Her Majesty the Queen, a suite of rooms in Marlborough House was appropriated to the reception of the various art-manufactures, comprising pottery, glass, metal-working, furniture, textile fabrics, enamels, etc. This Museum remained open to the public until February, 1857, when it was closed for the removing of the collection to the Iron Building at South Kensington, which had been presented to the Government by H. M. Commissioners for 1851. In 1856, a sum of 10,000*l.* was voted by Parliament for removal of schools. This important division of the Museum contains at present a collection of Ancient, Mediæval, and Modern Art-workmanship, of various countries, acquired by purchase, gift, and bequest, comprising upwards of 20,000 objects, in addition to a grand collection of reproductions of Art-objects in other National Collections, which have been obtained by the electrotype process, or by castings in plaster, and which are deemed to be of great importance as models for guiding the Art-student.

The National Art Library contains about 33,000 volumes. This collection of books differs from most of our national libraries, inasmuch as it has been chiefly acquired by moneys granted by the State for the special purpose of Art-teaching, and the books have nearly all been selected by competent judges ap-

pointed by the Committee of Council on Education. The Art Library also contains 10,000 drawings, 23,000 engravings, chiefly of ornament, and 36,000 photographs.

The Collection of British Pictures at South Kensington was commenced by the gift of Mr. Sheepshanks, who, in presenting his pictures to the nation, stipulated that they should be kept in a suitable building in the immediate neighborhood of Kensington. The value of this gift, which comprises some of the choicest pictures of the British School, was then estimated at 53,000*l.*, but it is now worth a considerably larger sum. This gift was followed by other donations of Pictures, and the galleries now contain 585 oil paintings and 1,005 water-color drawings, specimens of the works of the best British Masters, nearly all contributed by private individuals for the advancement of the public Art-education of this country.

The Collections of Sculpture consist chiefly of decorative sculpture of the Renaissance period in marble, stone, and terra cotta, including numerous specimens of the glazed terra cotta of the 15th century, known as Della Robbia ware.

The Educational Collection was begun by the Society of Arts, and first exhibited in St. Martin's Hall in 1854, after which exhibition numerous objects were presented to the Government to form the nucleus of an Educational Museum. These were added to the other collections at the South Kensington Museum, and this collection has now, by means of the voluntary contributions of the publishers of Educational Works and by the aid of the State, become a very important branch of the South Kensington Museum, seeing that its library contains upwards of 20,000 volumes of Educational Books, and the collection of Models and appliances for educational purposes numbers some thousands of specimens.

Materials for Building and Construction.—The nucleus of this collection was formed partly by gifts and purchases from the Exhibition of 1851 and from the Paris Exhibition of 1855. It has since been greatly increased and chiefly maintained by the voluntary contributions of building contrivances offered for exhibition by the inventors of the same. It comprises samples of building stones, cements, terra cottas, bricks, fire-proof floors, ornamental tiles, enamelled slate, specimens of woods for construction, etc.

Substances used for Food.—The Food Museum was first estab-

lished and became part of the South Kensington Museum in 1857: it is arranged with the express object of teaching the nature and sources of food, representing the chemical composition of the various substances used as food, and the natural sources from which they have been obtained. This collection has lately been removed to the Bethnal Green Branch Museum.

Reproductions by Electrotype, by Casting, and by Photography, of historical Art-monuments and of Art-objects existing in the collections of other countries, have been obtained and used, not only for exhibition in the South Kensington Museum, but to furnish models for the use of students in the 2085 Schools of Art in the provinces. Many such objects, of great educational value, have been secured by the Convention for International Exchange of Reproductions of Art-objects, made by some of the leading Powers of Europe at the Paris Exhibition of 1867.

Naval Models.—In the year 1864 the collection of the Naval Models belonging to the Admiralty was removed from Somerset House to South Kensington. This collection has, for educational purposes, since been transferred to the Royal Naval School at Greenwich; but during the time of its remaining in the galleries secured for its exhibition by the authorities at South Kensington, so many acquisitions were made that the collection now belonging to the nation exhibited at South Kensington has become very important, especially in models and appliances for modern warfare.

Loans from Private Collectors.—In addition to those important collections of Art-objects acquired by the State, the South Kensington Museum contains in one of its courts, especially devoted for the service, a large collection of Art-objects on loan from various private owners, who desire to co-operate with the Government in carrying on the Art-education of the public. Objects lent for exhibition are accepted on the understanding that they remain for a period of not less than six months; and although every care that the State can command is guaranteed for such deposits, the authorities of the Museum do not hold themselves responsible for loss or damage. Numerous special Loan Exhibitions of great importance have also been held, the last being that of Enamels on Metal, opened in June, 1874.

Circulation.—From the first formation of the Museum Collec-

tions, a system of circulation of selected objects for exhibition in aid of Schools of Art in the provinces has been in force. Since 1864 this system has been much extended; contributions have been made to 245 Exhibitions, and the number of ascertained visitors to these has exceeded five millions. The Museum, as a general storehouse for objects which can be sent to schools of Science and Art, has, under the term 'circulation,' three distinct classes of objects, which are distributed under the following heads:

1. Examples furnished to Schools of Art and Science for stated periods for the purpose of study.

2. Original art objects, paintings, electrotype reproductions, etc., for exhibition in connection with Schools of Art.

3. Circulation of reproductions by various processes, electrotype, photography, etching, chromo-lithography, etc., sent on deposit loan, to be retained by the schools for a period of one or more years.

COST OF THE COLLECTIONS IN THE MUSEUM UP TO THE YEAR 1874.

Although these valuable collections have been very much enriched and increased by the liberal donations and bequests of private collectors, their accumulation has been mainly achieved by monetary grants from the State, the amount of which has for several years exceeded an average of 22,000*l.* sterling per annum. The total cost to the nation of the South Kensington Museum, including Administration, Building, and Collections, to the 31st of March, 1874, is stated in a Parliamentiary paper to amount to 1,191,709*l.* 17*s.* 4*d.* Of this, the sum of 281,672*l.* 6*s.* 1*d.* has been applied to the purchase of the Collections. The following Table gives the cost of each class of objects in the Museum:

	£.	s.	d.
Sculpture (Marble, stone, terra cotta, original casts in wax and stucco,)	19,857	0	11
Mosaics	2,129	4	0
Carvings in ivory, bone and horn	18,435	8	6
Woodwork (Carvings, furniture, and frames, etc.)	24,659	11	4
Metal work (Iron, steel, bronze, etc.)	17,896	12	11
Coins, Medals, Medallions, etc.	1,907	17	11
Arms and Armor	3,025	15	4
Silversmiths' work	13,374	5	3
Jewelry and Goldsmiths' work	15,995	10	6
Enamels on metal	17,017	5	2
Earthenware and stoneware	22,796	18	11
Porcelain	6,898	3	11

	£.	s.	d.
Glass vessels, etc.	4,990	2	3
Painted and Stained Glass	1,835	1	11
Leather-work and Book-binding	1,022	12	3
Textiles, including embroidery	6,663	9	8
Lace	715	7	9
Musical instruments	3,802	15	0
Paintings in oil, etc.	4,709	0	7
Water-color drawings, miniatures, etc.	4,806	13	3
Meymar Collection of Arabian Art, etc.	2,261	0	0
Reproductions (Plaster casts, Electrotypes, etc)	30,220	18	1
Books in Art Library	23,061	7	10
Prints and Drawings in Art Library	13,281	16	10
Photographs in Art Library	2,299	2	3
Educational and Scientific collections	13,307	8	9
Construction and building materials	2,695	8	1
Marine model collections, etc	2,006	6	1
Total cost of collections to 31 March, 1874	£281,672	6	1

Number of Objects acquired by the Art Division of the South Kensington Museum, from its formation in 1852, *to the close of* 1874:—

Year.	No. of Objects.	Year.	No. of Objects.
1852	1064	1864	1416
1853	1148	1865	792
1854	436	1866	344
1855	1387	1867	338
1856	816	1868	1158
1857	813	1869	1833
1858	257	1870	1503
1859	879	1871	1764
1860	643	1872	1640
1861	548	1873	1632
1862	268	1874	1439
1863	1139		

REGULATIONS FOR VISITORS.

The Museum is opened daily, *Free* on Mondays, Tuesdays, and Saturdays, from 10 a. m. till 10 p. m. The *Students' Days* are Wednesdays, Thursdays, and Fridays, when the public are admitted on payment of 6*d.* each person, from 10 a. m. to 6 p. m.

Tickets of Admission to the Museum, including admission to the Art Library and Educational Reading-room, and also to the Branch Museum at Bethnal Green, are issued at the following rates: *Weekly*, 6*d.*; *monthly*, 1*s.* 6*d.*; *quarterly*, 3*s.*; *half-yearly*, 6*s.*; *yearly*, 10*s.* *Yearly* tickets are also issued to any school at 1*l.*, which will admit all the pupils of such schools on all Studdents' Days. To be obtained at the Catalogue Sale-stall of the Museum.

ATTENDANCE AT THE SOUTH KENSINGTON MUSEUM.

1875.	FREE DAYS.		Students' Days.	Totals.	Corresponding Numbers in			
	Morning	Evening.			1874.	1873.	1872.	1871.
January.....	37,406	16,219	8,182	61,807	65,380	67,705	91,199	6,9999
February....	28,393	14,504	7.131	50.028	52,500	47,793	147,609	71,742
March	59,831	20,235	6,863	86,929	63,329	67,562	138,514	75,449
April	35,800	17,004	10,453	63,257	106.831	89,422	165,889	113,574
May	52,140	19,506	9,601	81,247	97,937	62,100	91,152	103,279
June	33,157	16,075	17,204	66,436	90,368	85,145	75,748	71,631
July.....	44,837	19,358	14,987	79,182	70,470	70,585	78,222	81,872
August	49,594	22,297	9,109	81,000	98,256	77,153	88,459	76,384
September..	.....	.....	.....	.....	80,917	80,371	75,720	75,992
October.....	.....	.....	.....	.....	75,622	65,497	66,375	69,775
November..	.....	.....	.....	.....	50,619	58,134	53,460	48,320
December .	.....	.....	.....	.....	61,898	87,570	83,721	81,312
Totals.....	341,158	145,198	83,530	569,886	914,127	859,037	1,156,068	939,329

Total since the opening of the Museum on the 22d of June, 1857, 14,510,114.

COMPARISON OF THE YEARLY NUMBER OF VISITORS.

Years.	Number of Visitors.			Years.	Number of Visitors.		
	Morning.	Evening.	Total.		Morning.	Evening.	Total.
1854	104,823	At	104,823	1865	444,803	248,151	692,954
1855	78,427	Marlboro	78,427	1866	515.674	240,401	756,075
1856	111,768	House.	111,768	1867	442,877	203.639	646,516
1857	120,371	147,920	268,291	1868	599,143	281,933	881,076
1858	237,272	219,016	456,288	1869	768,765	274,880	1,043,654
1859	263,088	212,277	475,365	1870	626,387	271.909	1,014,849
1860	347,596	263,100	610,696	1871	690,128	249,201	939,329
1861	379,156	225,394	604,550	1872	701,010	315,314	1,156,068
1862	849,192	392,177	1,241,369	1873	411,732	247,305	859,037
1863	463,504	263,411	726,915	1874	642,880	271,247	914,127
1864	413,980	239,089	653,069				

NEW BOOKS.

THE MOSAIC ACCOUNT OF CREATION, The Miracle of To-day. By Charles B. Warring. New York: J. W. Schermerhorn & Co., 14 Bond street.

It must be accepted as a good sign that the controversy between science and religion has lost nearly all its bitterness, and that both the combatants seem to be preparing for a treaty of peace, which will secure their future friendly co-operation. The views which Dr. LeConte so ably inculcated in his late address before the American Association, must command the approval of every earnest truth-seeker, for their catholic recognition of the equal importance of the æsthetic and the intellectual sides of our nature. When such recognition becomes general, specialists

will cease to attempt generalizations for which they are not fitted, and theorizers will cease to dogmatize.

Mr. Warring discusses his subject with great earnestness and becoming modesty. While avowing himself a firm believer in Biblical revelation, he claims no exemption from scientific criticism. He accepts the narrative of Genesis as literally true, regarding the "days" as days of approval terminating successive indefinite periods of creative development. There will, naturally, be great differences of opinion as to the accuracy and value of his interpretations, but their ingenuity and sincerity are praiseworthy. The points presented in the following passages are especially well taken.

"A class of scientists of distinguished ability have reached a conclusion to their inquiries into the origin of things, in the proposition that 'all evolution' is due to a Power Unknowable, a proposition which they appear to regard as an important outstretch of the human mind. I can understand that one can positively and truly assert that this Power is unknown to *him*, or that, on the authority of a person who has thoroughly examined and comprehended this Power and the capacity of the human mind, he may receive as a matter of faith the assertion that this First Cause is 'Unknowable,' but how any man can assert this of his own authority, I cannot conceive. The very affirmation implies the most exhaustive knowledge, and thus destroys itself. . . . The only question that concerns us is, can this Power make himself known to us? Does he interest himself in his creatures? Does he regard their welfare? If so, can he let us know it? I can communicate my wishes to my fellows; even the brutes have, in a limited degree, the same faculty. Has this Unknown Power less ability?"—*Preface, pp.* 7, 8.

The Recent Origin of Man, As Illustrated by Geology, and the Modern Science of Prehistoric Archæology. By James C. Southall. Illustrated. Pp. 606. Royal 8vo. Philadelphia, J. B. Lippincott & Co.

Mr. Southall has not laid to heart the maxim of the wise Bœotian that "the half is more than the whole." He has given us in these very closely printed six hundred pages, a controversial work erected after the proportions usual in theological polemics in the sixteenth century, but long abandoned even by the theologians. *Vita brevis* one must say *apropos* of such a book, and recall the question put by Jerome, "Who on earth has ever read as much as Origen has written?" Mr. Southall introduces all sorts of extraneous matters that he had much better have omitted. All in the first seven chapters that he should have said, might have been compressed into one chapter shorter than any of them. And then

when he really buckles to his work in the later chapters, he goes over the whole ground of every subject *ab ovo*, putting his readers in possession, not of the general outline of the facts that form the basis of dispute, but of the very details. His work is a repository of all things known and alleged on the subject—very useful to any one that wishes to master the subject in its entirety, but not likely to prove readable to the much larger classes who either know much more than our author assumes, or care to know much less than he would teach them.

We say this with regret, because although not passionately addicted to either side of the dispute, and not at all persuaded that any very fearful consequences to Christian theology would arise from the establishment of the thesis Mr. Southall assails, we do believe that the processes of scientific ratiocination by which that thesis was reached have been anything but scientifically severe and accurate. That the earliest history begins something less than three thousand years before the Christian era, and that it finds already on the stage some nations in a state of civilization and others in a state of barbarism; that all beyond that limit is uncertain in the largest sense of the word, so far as archæology can construct that past from existing remains; that the attempts to draw sharp lines of distinction between the stone age of the Dolmens and Tumuli, and the metallic ages which followed them, is untenable in the face of the evidence furnished by archæology itself; that the lake-dwellers instead of belonging to a dim past, distant by millenniums from the beginning of history, continued to exist till far on in the historical period; that the inferences drawn from the bones found in caves and under gravel drifts, are open to grave objections to the calculations drawn from the time required for superincumbent deposits;—these are a few of the main positions maintained in this book. He regards all the prehistoric remains found in Europe as the work of the Uigrian Tartars, whom the Aryan races found in possession of the whole continent, and who are in later days represented by the Rhaetians, Etruscans or Raseni, Lapps, Finns, Livs and Letts. Mr. Southall makes no pretense of writing in a judicial spirit. The ardor and flash of a true Virginian temper enlivens his pages, and gives variety to what might else be dry discussion.

His own conviction is that the race originated at about the era fixed by the Mosaic chronology, in a state of civilization; that all mankind have sprung from a single stock; that barbarism marks degeneracy from the original type, instead of being a perpetuation of an earlier stage shared by all; that the moderately civilized and not the barbarian races are the representatives of the earliest type of humanity.

Much of his book will have the interest of novelty for the great mass of readers. The light cast by modern investigations upon

the earlier outline and formation of continents, especially on the existence of a vast mediterranean sea stretching from the Euxine to the Gulf of Obi in Siberia, and covering the vast salt deserts of Chinese Tartary almost to the frontiers of that empire, corresponding as it does to the statements of earlier geographers, helps us to see why vast changes have taken place in the temperature of different localities, through the sudden removal of the modifying element of water from one locality, and its transfer to another. So again, to come closer home, the early ethnographic changes on our own continent, the destruction of one race after another, leaving at last the Aztec and the Indian for the European invader to overcome, give emphasis to the statement that no race has ever yet succeeded in perpetuating itself on American soil, and whether the European race will do so is problematical.

That Mr. Southall's book will serve the purpose he has in view is exceedingly doubtful. Its defects as a book are very much in its way. But it is well for the progress of archæology that there should be such a vigorous and detailed criticism of supposed results accessible to all.

ANCIENT HISTORY FROM THE MONUMENTS.

I. EGYPT from the Earliest Times to C. C. 300. By S. Birch, LL. D. Pp. 202. 12 mo. New York: Scribner, Armstrong & Co.

II. ASSYRIA from the Earliest Times to the Fall of Nineveh. By George Smith, of the Department of Oriental Antiquities in the British Museum. Pp. 202. 12mo. Same publishers.

III. PERSIA from the Earliest Period to the Arab Conquest. By W. S. W. Vaux, M. A., F. R. S. Pp. 203. 12mo. Same publishers.

These three handy-books are the offspring of the Democratic age of literature. They are written by men each of the first rank in the special line of historical study to which the books belong, by men who have already discussed the same themes in works of much greater bulk and diffuseness, but who have here addressed themselves to the preparation of popular summaries of what is definitely known on these topics. Fifty, nay thirty years ago, it would have been thought unworthy of scholars of such standing to prepare such books, but a truer feeling for the relation of the advance of knowledge in all its branches to the advance of the people now prevails in general literature, thanks to the good example set by scientific men.

Mr. Birch's work is the production of a cautious and conservative Egyptologist, and will not greatly shock the nerves of those who think that men are to be saved by a faith in Hebrew chronology. He puts the starting point of Egyptian history —the reign of Menes—at 3000 B. C.; whereas Bunsen has

given us a translation of the Lord's Prayer into the Egyptian that was spoken 5000 B. C. In other words, while very properly accepting the Egyptian chronology as that which stretches the farthest back into the ages that are elsewhere pre-historic, he yet assumes but a moderate length for even it.

Considered simply as a work of history, Mr. Birch's book is hardly a success. His prolonged researches among inscriptions and papyri seem to have chilled his imagination; he does not vividly and sympathetically depict the life of the great population that once swarmed in the Nile valley. To be sure, the record of dynasties and their royal doings must always be the easiest and the chief thing to write of in Egyptian history, and to get behind the dynastic record, to see what those pictures and tombs tell us indirectly, is both difficult and hazardous. But till it is done, as in some degree it has already been done, we have no history of Egypt in any proper sense.

Mr. Smith's work on Assyria is, we think, a better piece of historical work, though drawn from far scantier materials. The great Shemitic Empire of the upper Tigris has a history that extends from 1820 to 607 B. C., although its earlier portion is exceedingly obscure, and even before it began the Akkadian empire of Babylon dominated the valley of the great rivers. The ethnological relation of the country to Judea, and the resemblance of the Assyrian traditions to the Mosaic records of the Creation and the Deluge, as well as the part played by Nineveh in the history of Judea, and the notices in the prophetic books, give a decided interest to the whole story. So much light has recently been cast on the matter by the decipherment of inscriptions, that it is forgotten how much was already known from Greek authorities. Marcus Niebuhr, son of the historian of Rome, has written a history of the Empire from purely classical sources, and the coincidence of the results thus reached with those obtained from the monuments is very striking. For instance, the story of the flood, whose decipherment first brought Mr. Smith's name into notice, is substantially the same in both, and Herr Niebuhr pronounces that in the Mosaic books we have the great central current of Shemitic tradition, while in the Assyrian version that current is mingled with extraneous elements. This he shows by a careful analysis of the facts,

Mr. Smith is a vigorous and very interesting writer, and one who sees not merely the single fact, but its bearing upon the State system of Eastern Asia. He has an Englishman's political instinct, and an English conservatism and respect for the Bible.

Mr. Vaux's work on Persia should be of warm interest to us, their Aryan brethren. But it is not in the strict sense a "history from the monuments." The monuments of Persian greatness are very scanty; the literary records are comparatively

abundant, from the Zendavesta downward. We cannot think that Mr. Vaux has made the best use of his materials. He has no higher model of history than Gibbon, and we get from his book no adequate idea of the people, their relation to other Aryan races, their remarkable creed and its curious transformations, their marked character in contrast to the Turanian races on one side and the Shemitic on the other. Still he has given a very useful and clearly written manual of the great outlines of the history, and one that will offend no popular prejudices. He accepts even the Book of Daniel as historical.

EPOCHS OF HISTORY: IV. THE HOUSES OF LANCASTER AND YORK, with the Conquest and Loss of France. By James Gairdner. Pp. 262, 12mo., with five maps.

V. THE FRENCH REVOLUTION and the First Empire: An Historical Sketch. By William O'Connor Morris. With an Appendix upon the Bibliography of the Subject, and a Course of Study, by President White, of Cornell University.

In these two volumes of the series edited by Mr. Morris, are discussed what are perhaps the two most difficult periods em braced in the original plan of the series. The York and Lancaster period, especially in its concluding struggle—the War of the Roses—is a "confusion worse confounded," in which the effort to discern a purpose and a meaning under the movement of events, is simply barren and wearisome. We turn away from the public records to the contemporary picture of English family life and social interests given in the *Paston Letters*, with a feeling of relief, and a sense of having discovered the clue to the secret—how a country could have gone through such a chaos, and yet survived and preserved its social morality. Mr. Gairdner, the editor of the last, best edition of those *Letters*, has given much attention to the period they represent. He has, we believe, been employed in the Rolls' office, in editing some of the records of that age. He is as familiar with its history as the human mind can become with anything that has not right reason as its formative and normative principle. And he has given us a popular record of its transactions, which has at the same time the merits of a work of original authority. He depicts very graphically the manifold confusion of the reign of Richard II., the one English king whom Shakespeare heartily loved, and sympathized with in misfortune; the vigorous and successful rule of Henry IV. and Henry V., and the French wars; the confusions that followed till Bosworth put the English crown on a Tudor head. He always bears in mind that mediæval England shared in the intellectual movement of Latin Christendom, and that she was a part of the State system of Europe, under the nominal headship of the Holy

Roman Empire. He tells of the life of the people on all its sides, and leaves a clear and complete impression upon his reader's mind.

The French Revolution is a difficult theme for a brief manual for exactly the opposite reasons. Its meaning and its importance, even in the early days of its bloody phantasmagoria, is so manifold and clear, that the difficulty is that of omission. Its worst days were days of such display of greatness of character and resolute adherence to principle—even if mistaken—that the light of heaven falls athwart blackness as of the pit. The soldier's empire that grew out of it—the grand personality of the man who embodied Democratic aspirations and ruled in the sense of the people—the closing struggle between *le grande peuple* and the rest of Europe—every stage of the great drama is worthy of a Shakespeare. Its earlier scenes have found one in Carlyle.

Mr. Morris's narrative is simple and direct. He writes, of course, as an Englishman, on a subject on which English and American judgments do not quite coincide, and on some points he only sees one side where there are certainly two. He does not understand the Continental system and its economical results for Europe, and its far-reaching consequences for the world in transferring the leadership in the practical arts from empiricism to the pure sciences. But on the whole he is eminently just and fair, and the summing up in regard to Waterloo is a fine piece of judicial opinion.

Both this and the series of ANCIENT HISTORY FROM THE MONUMENTS, issued by the same publishers, are very admirably printed by a Philadelphia house.

BOOKS RECEIVED.

Bible Commentary. Vol. V. Isaiah, Jeremiah, and Lamentations. According to the Authorized Version (1611). By Bishops and other Clergyof the Anglican Church. Edited by F. C. Cooke, M. A. Price $5.00. New York: Scribner, Armstrong & Co.

Ancient History from the Monuments. I. Egypt. From the earliest times to B. C. 300. By S. Birch, LL. D. II. Assyria. From the earliest times to the fall of Nineveh. By George Smith, of the British Museum. III. Persia. From the earliest period to the Arab Conquest. By W. S. W. Vaux, M. A., Each volume handsomely illustrated. Small 12mo, Cloth 1.00. New York: Scribner, Armstrong & Co.

Proceedings of the Seventh Annual Meeting of the National Board of Trade, held in Philadelphia, June, 1875. Chicago: Knight & Leonard, Printers.

The History of Co-operation in England, its literature, and its advocates. By George Jacob Holyoake. Vol. I. The Pioneer Period—1812 to 1844. Philadelphia: J. B. Lippincott & Co., 1875.

Brigadier Frederick. A Novel. By Erckmann-Chatrian. No. 48, Library of Choice Novels. 50 cents. New York: D. Appleton & Co.